Pacific Island Network
Vital Signs Monitoring Plan:
Phase III Report

Appendix C: Current Monitoring Within and Adjacent to the Network

Gordon H. Dicus (NPS)

Pacific Island Network (PACN)

Territory of Guam
War in the Pacific National Historical Park (WAPA)

Commonwealth of the Northern Mariana Islands
American Memorial Park, Saipan (AMME)

Territory of American Samoa
National Park of American Samoa (NPSA)

State of Hawaii
USS Arizona Memorial, Oahu (USAR)
Kalaupapa National Historical Park, Molokai (KALA)
Haleakala National Park, Maui (HALE)
Ala Kahakai National Historic Trail, Hawaii (ALKA)
Puukohola Heiau National Historic Site, Hawaii (PUHE)
Kaloko-Honokohau National Historical Park, Hawaii (KAHO)
Puuhonua o Honaunau National Historical Park, Hawaii (PUHO)
Hawaii Volcanoes National Park, Hawaii (HAVO)

http://science.nature.nps.gov/im/units/pacn/monitoring/plan/

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Last revision: 1 November 2005

Organization contact information:

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LIST OF TABLES

This appendix presents a summary of current monitoring projects within Pacific Island Network parks, as well as selected monitoring projects deemed relevant to network parks (e.g., water quality monitoring adjacent to park waters). Table 1 summarizes this information and indicates whether monitoring is being conducted by a PACN national park or another entity, such as a federal, state, territory, or Commonwealth agency or community group. The list in this appendix is limited to monitoring projects that are designed to be long term in duration. More detailed information on each monitoring project, organized by topical area, follows the table.

Table 1. Current monitoring in parks and adjacent lands in the Pacific Island Network.

Level 1	Level 2	Monitored variable	AMME	WAPA	NPSA	USAR	KALA	HALE	ALKA	PUHE	KAHO	PUHO	HAVO
	Δ = Currently being monitored by park. ▼ = Currently being monitored by another agency or organization.												
Air & Climate	Air Quality	Particulates (IMPROVE suite)						Δ					Δ
		Volcanic ash	▼										
		Contaminants (ozone, CO2, etc.)											Δ,▼
		N & S deposition											▼
	Weather	Weather/ climate			▼			▼					Δ
Geology & Soils	Subsurface Geologic Processes	Earthquakes			▼	▼	▼	▼	▼	▼	▼	▼	▼
		Surface volcanic activity							▼	▼	▼	▼	▼
		Ground deformation											▼
	Soil Quality	Erosion		Δ						▼			
Water	Hydrology	Stream flow			▼								
		Tsunamis			▼	▼	▼	▼	▼	▼	▼	▼	▼
		Groundwater levels			▼								
	Water Quality	Chemistry (pH, N, DO)		▼	▼	▼			▼				
		Toxics	▼	▼	▼	▼							
		Macroinvertebrates & algae			▼								
		Microorganisms		▼	▼	▼			▼	▼			
		Water temperature			Δ,▼								
Biological Integrity	Invasive Species	Established alien plants						Δ					Δ
		Argentine ant						Δ					
		Invasive small mammal monitoring & control						Δ		Δ	Δ		
		Kalij pheasants											Δ
		Invasive insect monitoring & control											Δ
		Roadside weeds										Δ	Δ
		Invasive marine algae									Δ		
		Feral ungulate monitoring & control			Δ			Δ					Δ
	Infestations and Disease	Passerine bird disease											▼
	Focal species or Communities (including at-risk species)	Coral reef fish communities	▼	▼	Δ,▼					▼	▼	▼	
		Coral dist./abund.			Δ								
		Effects of vegetation management/restoration					Δ			Δ,▼	Δ		Δ
		Vegetation growth/ composition		▼	▼								Δ,▼
		Terrestrial invertebrate communities					Δ						Δ,▼

Level 1	Level 2	Monitored variable	AMME	WAPA	NPSA	USAR	KALA	HALE	ALKA	PUHE	KAHO	PUHO	HAVO
	Δ = Currently being monitored by park. ▼ = Currently being monitored by another agency or organization.												
		Rare upland plant species & communities											Δ
		Rare coastal plant species & communities								Δ			Δ
		Dark-rumped petrel nesting											Δ
		Green sea turtle dist./abund.							▼	▼	▼	▼	▼
		Hawksbill sea turtle nesting											Δ
		Silverswords & silversword restoration						Δ					Δ
		Nene (hawaiian goose) dist./abund., genetic info, nesting											Δ
		Shark dist./abund.											
		Leafhopper dist./abund.								Δ			Δ
		Waterbird dist./abund.									▼		
		Forest bird dist./abund.			Δ								
Human Use	Consumptive Use	Fisheries			▼								
	Visitor and Recreation Use	Overflight noise											Δ
		Visitation										Δ	Δ
Landscape (Ecosystem Pattern & Processes)	Fire	Landscape pattern						Δ					
	Land Use and Cover	Historic viewscapes						Δ					

ORGANIZATIONS MONITORING NATURAL RESOURCES IN OR NEAR PACN PARKS

This list of organizations is based on records generated through PACN data mining (see Glossary) and is not an exhaustive list of all organizations conducting monitoring in or near PACN parks.

AECOS Environmental Laboratory
American Samoa Department of Marine and Wildlife Resources
American Samoa Environmental Protection Agency
American Samoa Power Authority
Asian Institute of Technology
Commonwealth of the Northern Mariana Islands Emergency Management Office
Commonwealth of the Northern Mariana Islands, Department of Lands and Natural Resources, Coastal Resources Management
Commonwealth of the Northern Mariana Islands, Department of Lands and Natural Resources, Division of Fish and Wildlife

Commonwealth of the Northern Marianas Islands - Division of Environmental Quality
Guam Division of Aquatic and Wildlife Resources
Guam Environmental Protection Agency
Hawaii Marine Mammal Consortium
Hawaiian Silversword Foundation
Institute of Geological and Nuclear Sciences Limited, New Zealand
Kealakehe High School
Kula Naia Wild Dolphin Research Foundation Inc.
Manila Observatory, Ateneo de Manila University
Marine Consultants of Hawaii
Mauna Kea Soil and Water Conservation District
National Oceanic and Atmospheric Administration
National Oceanic and Atmospheric Administration National Marine Fisheries Service
National Oceanic and Atmospheric Administration, Coral Reef Watch
National Oceanic and Atmospheric Administration, Hawaiian Islands Humpback Whale National Marine Sanctuary
National Oceanic and Atmospheric Administration, National Climatic Data Center
National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Marine Mammal Research Program
National Oceanic and Atmospheric Administration, Pacific Tsunami Warning Center
National Park Service
Natural Energy Laboratory of Hawaii Authority
Navy Region Hawaii Environmental
Oceanic Institute
Ogden Environmental and Energy Services Co., Inc.
Reef Check
Reef Environmental Education Foundation (REEF)
Rutter Development Corporation
Slimbridge Wildfowl & Wetlands Trust
Stanford University
State of Hawaii Department of Health
State of Hawaii Department of Health, Clean Air Branch
State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources
State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife
The Nature Conservancy -Hawaii
Tropical Reforestation Ecology Experiment

U.S. Army Corps of Engineers
U.S. Department of Agriculture, National Resources Conservation Service
U.S. Environmental Protection Agency
U.S. Geological Survey
U.S. Geological Survey, Biological Resources Discipline, Pacific Island Ecosystems Research Center
U.S. Geological Survey, Hawaiian Volcano Observatory
U.S. Geological Survey, National Earthquake Information Center
U.S. Geological Survey, Pacific Science Center
U.S. Navy Public Works Center Guam
University of Guam, Marine Laboratory
University of Guam, Water and Environmental Research Institute
University of Hawaii and National Oceanic and Atmospheric Administration Joint Institute for Marine and Atmospheric Research
University of Hawaii at Hilo
University of Hawaii at Manoa
University of Hawaii, Hawaii Institute of Marine Biology, Hawaii Coral Reef Assessment and Monitoring Program
University of Hawaii, School of Ocean and Earth Science and Technology
University of Hawaii, Sea Level Center
University of Hawaii, The Hawaii Institute of Marine Biology
Volcano Rare Plant Facility
Washington State University, Vancouver

EXISTING MONITORING PROJECTS IN THE PACIFIC ISLAND NETWORK

An explanation of fields used in the Existing Monitoring table

Projects are listed first by topic and then by park. Parks are listed by their four letter code. “First Year” indicates the year monitoring began and “End Year” indicates the year monitoring ended. “Status” indicates whether monitoring is currently occurring (In Work), Complete, or Planned. If a field is blank for a given record, the information is unknown.

Topic Air Quality

PARK : HAVO First Year: 2000 End Year: 2005 Status Complete

Project Title NADP/NTN (National Atmospheric Desposition Program/ National Trends Network)

Data Type/Location Bulk rain collection, HAVO, at the 'old orchid farm' along the 'Escape' Rd., elevation 1195 m

Comments: A second NADP site was located at the NOAA CMDL Observatory on Mauna Loa (approx. 3 Km from HAVO boundary), elevation 3399 m, data collection from 6/1980 - 9/1993.
record edited 5/05 by K.S. NOT CURRENT MONITORING.

Data Collected Weekly integrated samples. Samples are analyzed for hydrogen (acidity as pH), sulfate, nitrate, ammonium, chloride, and base cations (such as calcium, magnesium, potassium and sodium).

Proj Purpose The purpose of the network is to collect data on the chemistry of precipitation for monitoring of geographical and temporal long-term trends.

Oranizations associated with this Project:

Theme Keywords associated with Project

acid rain

air quality

Publications associated with this Project:

PARK : HAVO First Year: 1999 End Year: 2004 Status Complete

Project Title CASTNET (Clean Air Status and Trends Network)

Data Type/Location Site is located at the 'Old Orchid Farm' clearing along the 'Escape Rd' in HAVO (colocated with NADP, elevation 1199 m)

Comments: Ozone measurements ended in 2003. NOT CURRENT MONITORING--MOVE TO DATASET CATALOG. entry edited 6/05 by K.S.

Data Collected Composition of total nitrogen and sulfur deposition by species; Trends in total nitrogen and sulfur deposition; Trends in wet and dry nitrogen and sulfur deposition; hourly Ozone averages; meteorological data

Proj Purpose CASTNET provides atmospheric data on the dry deposition component of total acid deposition, ground-level ozone and other forms of atmospheric pollution. CASTNET is considered the nation's primary source for atmospheric data to estimate dry acidic deposition and to provide data on rural ozone levels. Used in conjunction with other national monitoring networks, CASTNET can help determine the effectiveness of national emission control programs.

Oranizations associated with this Project:

US National Park Service

Environmental Protection Agency

Theme Keywords associated with Project

meteorology

Publications associated with this Project:

PARK : HAVO First Year: 1988 End Year: Status In work

Project Title Interagency Monitoring of Protected Visual Environments (IMPROVE)

Data Type/Location The HAVO IMPROVE station is located behind the visitor center, near the rainshed; elevation 1204 m

Comments: At HALE IMPROVE monitoring started in 2/1991 and is ongoing. The HALE station is located at the Olinda Research facility, just outside of HALE as no suitable site within park boundaries could be identified; elevation 1158 m. record edited 5/05 by K.S. CURRENT MONITORING PLAN

Data Collected

Proj Purpose The program is designed to establish current visibility and aerosol conditions in mandatory class I areas, identify chemical species and emission sources responsible for man-made visibility impairment; document long-term trends for assessing progress towards the national visibility goal, and provide regional haze monitoring representing all visibility protected federal class I areas where pratical.
IMPROVE monitors suspended particulate matter affecting visibilty.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

visibility

Publications associated with this Project:

PARK : **HAVO** First Year: End Year: Status

Project Title Gaseous Pollutant Monitoring Network, NPS Air Resources Division

Data Type/Location HAVO sites: The Observatory, elevation 1123, barometric pressure,RH, Precipitation, Std. Deviation of wind direction, vector wind direction and speed, scalar wind direction, ambient temperature, sulfur dioxide; all parameters from 10/99 to 6/2004
Visitor Center, elevation 1215 m, dew point (12/1986-3/1998); RH (2/1991-7/1995 and 3/1998-present); precipitation, std dev of wind direction, solar radiation, scalar wind speed, vector wind speed and direrction, ambient temperature (10/1986-present)sulfur dioxide (10/1986-present), Hydrogen sulfide (10/1986-8/1990); Ozone (11/1986-11/1995)
HALE sites: Olinda Research Facility, elevation 1097 m, Ozone, dew point, RH, precipitation, scalar wind speed, ambient temperature, vector wind direction; all parameters from 6/1991 to 6/1995

Comments: Metadata for CASTNet, Improve and NADP data collection at the above sites are also available from this website. record edited 5/05 by K.S. CURRENT MONITORING PLAN

Data Collected

Proj Purpose The NPS Air Resources Division operates a network of air quality monitoring stations (sometimes refered to as the Gaseous Pollutant Monitoring Network - GPMN) that measures primarily meteorological parameters and ozone. Sulfur dioxide is measured using continuous analyzers or with filter samplers in a subset of the network. The 1991 NPS Monitoring Strategy contains the monitoring plan that includes long-term "trends sites" and 3-5 year "baseline sites." Many stations are now operated jointly with the
EPA CASTNet.

Oranizations associated with this Project:

US National Park Service

US Geological Survey

Theme Keywords associated with Project

air quality

atmospheric

meteorology

Publications associated with this Project:

PARK : **NPSA** First Year: 1975 End Year: Status In work

Project Title NOAA CMDL Baseline Observatories.

Data Type/Location Cape Matatula, Tutuila;77.00 masl; Latitude: 14.23 S; Longitude: 170.56 W
Mauna Loa, Hawaii; 3397 masl; Latitude: 19.54 N; Longitude: 155.58 W

Comments: The Mauna Loa Observatory is located just outside HAVO; the same parameters as in Am.Samoa are measured; operations started in 1956; in addition a number of REsearch groups collect data.
NOAA CMDL has also been collecting meteorological data at these sites since 1976. See record# 233

Data Collected carbon dioxide, carbon monoxide, methane, nitrous oxide, surface and stratospheric ozone, halogenated compounds including CFC replacements, hydrocarbons, sulfur gases, aerosols, and solar and infrared radiation

Proj Purpose CMDL conducts sustained observations and research related to source and sink strengths, trends and global distributions of atmospheric constituents that are capable of forcing change in the climate of Earth through modification of the atmospheric radiative environment, those that may cause depletion of the global ozone layer, and those that affect baseline air quality.

Oranizations associated with this Project:

Theme Keywords associated with Project

air quality

Publications associated with this Project:

PARK : **PUHO** First Year: 1997 End Year: Status In work

Project Title Hawaii Air Quality Data

Data Type/Location This station is located on the grounds of the Konawaena High School at 81-1043 Konawaena School Road in Kealakekua, Hawaii. This special purpose monitoring station was established in April 1997 to monitor vog in the Kona area. The pollutant sampled at this site is SO2. The coordinates are 19°30'27.83302" N latitude and 155°55'03.67861" W longitude.

Comments: Several other stations in the state of Hawaii. Parameters measured at the various stations include SO2, H2S, pm2.5 and pm10. Another site close to a National Park is the Pearl City station in close proximity to USAR at which pm10 and pm2.5 have been measured since 1971.

Data Collected SO2 since 1997.

Proj Purpose The primary purpose of the statewide monitoring network is to measure ambient air concentrations of pollutants and ensure that state and federal air quality standards are met.

Oranizations associated with this Project:

Hawaii Department of Health, Clean Air Branch

Theme Keywords associated with Project

sulfur dioxide

Publications associated with this Project:

2002 Annual Summary Hawaii Air Quality Data, State of Hawaii, Department of Health, Clean Air Branch

PARK : **WAPA** First Year: 1979 End Year: 2002 Status Complete

Project Title NOAA CMDL Carbon Cycle Greenhouse Gases

Data Type/Location Guam Site is at Lat: 13.43 Long: 144.78 Elevation: 6m

Comments: NOAA/CMDL flask data from Guam show an increase in the annual mixing ratio from 340.05 parts per million (ppm) in 1980 to 373.26 ppm in 2002. (Tans, Pieter P. and T.J. Conway, 2005. Monthly Atmospheric CO2 Mixing Ratios from the NOAA CMDL Carbon Cycle Cooperative Global Air Sampling Network, 1968-2002. In Trends: A Compendium of Data on Global Change. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A.)

Data Collected Air samples are collected approximately weekly from a globally distributed network of sites. Samples are analyzed in Boulder by CCGG for CO2, CH4, CO, H2, N2O, and SF6; and by INSTAAR for the stable isotopes of CO2 and CH4.

Proj Purpose The NOAA CMDL Carbon Cycle Greenhouse Gases group makes ongoing discrete measurements from land and sea surface sites and aircraft, and continuous measurements from baseline observatories and tall towers. These measurements document the spatial and temporal distributions of carbon-cycle gases and provide essential constraints to our understanding of the global carbon cycle.

Oranizations associated with this Project:

University of Guam, Marine Laboratory

Theme Keywords associated with Project

air quality

Greenhouse gases

Publications associated with this Project:

Topic Climate

PARK : **HALE** First Year: 1988 End Year: Status In work

Project Title HaleNet (Haleakala Climate Network)

Data Type/Location HaleNet consists of two transects of climate stations along the leeward and windward slopes of Haleakala volcano, Maui Island, Hawai`i. All but two stations in the network are within Haleakala National Park.

Comments:

Data Collected parameters as listed below, HaleNet I (6 leeward) stations were established between 1988 and 2000 and are all currently active. Halenet II (5 windward) stations were established in 1992 (1 station in 200); 4 stations are still active.
Kd Incident Solar Radiation (W/m²)
Rn Net Radiation (W/m²)
SHF1 Soil Heat Flux 1, 8 cm (W/m²)
SHF2 Soil Heat Flux 2, 8 cm (W/m²)
Tir Surface Temperature (°C)
Ts Soil Temperature, avg 2 and 6 cm (°C)
Ta Air Temperature (°C)
RH Relative Humidity (%)
WS Wind Speed (m/s)
WSr Relative Wind Speed (m/s)
WD Wind Direction (degrees)
SM Volumetric Soil Moisture Content (m³/m³)
RF Rainfall (mm)

Proj Purpose Providing data on climate variability and change to investigate the sensitivity of Hawaiian high-elevation and aquatic ecosystems to global climate change.

Oranizations associated with this Project:

University of Hawaii - Manoa

USGS, Pacific Science Center

Theme Keywords associated with Project

meteorology

Publications associated with this Project:

PARK : **HAVO** First Year: 1973 End Year: Status In work

Project Title National Interagency Remote Automated Weather Stations (RAWS)
National Fire Danger Rating System (NFDRS)

Data Type/Location Mauna Loa Station (RAWS)1979-present
HAVO Headquarters 1973- present
Hilina Pali (RAWS)-1973-present
Coastal (manual) 1980-1995, 1995-present (RAWS)

Comments: RAWS stations in other PACN parks include:
HALE: RAWS & NFDRS, located at Kaupo Gap, operated from 1991 - present. CURRENT MONITORING PLAN
KALA: RAWS & NFDRS, located at Makapulapai, operated from 1993 - present
KALA: RAWS & NFDRS, located at Waikolu Valley, operated from 1993 - 1997
KAHO: Elevation 25 ft, Latitude 19:40:22, longitude 156:01:13 , GOES ID: FA667668, start 3/2005
record edited 5/05 by K.S.

Data Collected hourly data for: temperature, dew point, average and peak Wind speed, RH, Fuel temperature, fuel moisture

Proj Purpose monitoring air quality, rating fire danger, and providing information for research applications.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire

meteorology

Publications associated with this Project:

PARK : **NPSA** First Year: 1999 End Year: Status In work

Project Title Long-term temperature monitoring on the reefs in Vatia and Ofu.

Data Type/Location Temperature loggers (2 meters and 10 meters below surface) located at Vatia (near park boundaries) on Tutuila Island and Hurricane House (1-2 meters before surface) on Ofu Island (in park boundaries).

Comments:

Data Collected Since January 1999, water temperatures have been recorded hourly.

Proj Purpose Monitoring changes in water temperatures.

Oranizations associated with this Project:	Theme Keywords associated with Project
National Park of American Samoa	water temperature

Publications associated with this Project:

NBibKey ID 551969. Craig, Birkeland, & Belliveau. 2001. High temperatures tolerated by a diverse assemblage of shallow-water corals in American

PARK : **NPSA** First Year: 1985 End Year: Status In work

Project Title Hydrologic data collection in American Samoa. USGS

Data Type/Location Sites located on Tutuila. Network of 5 rain gages, 6 surface-water gages, and 52 wells (ground-water sites) is maintained. Data are collected using standard USGS methods

Comments: Next to check if NPSA has a copy of the 2 publications associated with this project. NPSA does not have a copy of U.S. Geological Survey nor B. R. Hill Water resources reports.

Data Collected Rainfall, stream flow and ground-water levels.

Proj Purpose Assessing water resources to provide provide scientific information for the management of water resources.

Oranizations associated with this Project:	Theme Keywords associated with Project
US Geological Survey	ground water level
American Samoa Power Authority	rainfall
	stream flow

Publications associated with this Project:

Hill, B.R., and Fontaine, R.A. 2000, Water resources data Hawaii and other Pacific areas, water year 1990.

Guam, Northern Mariana Islands, Federated States of Micronesia, Palau, and American Samoa: U.S. Geological Survey Water Data Report HI-90-2

Scott Izuka. 1997; Summary of ground-water data for Tutuila and Aunuu, American Samoa, for July 1985 through September 1996.

PARK : **NPSA** First Year: 1976 End Year: Status In work

Project Title NOAA CMDL OBOP Station Meteorology

Data Type/Location Cape Matatula (CMDL Samoa Observatory) located on the eastern end of Tutuila Island records a suite of meteorological parameters.
Mauna Loa,Hawaii,located on the northern slope of Mauna Loa

Comments: record edited KS 4/05.
NOAA CMDL has also been collecting extensive air quality data at these sites since. See Record #288

Data Collected vector wind direction in degrees, vector wind speed in meters per second, wind steadiness factor, station pressure in millibars, Air temperature in degrees Celsius, dew point temperature in degrees Celsius,precipitation amount in millimeters.

Proj Purpose Assessment of climate forcing and supportive data for air quality measurements.

Oranizations associated with this Project:

National Oceanic and Atmospheric Administration

Theme Keywords associated with Project

air temperature
meteorology
rainfall

Publications associated with this Project:

PARK : **NPSA** First Year: 1956 End Year: Status In work

Project Title National Weather Service (NWS)

Data Type/Location WSO AP, located on Tutuila island, Pago Pago International Airport, Tafuna.

Comments: Data indicate a steady increase in air temperature since about 1975. This may, in part, reflect the sensor: location in an increasingly urbanized area. Air temperatures at NOAA's Tula station do not show a similar increase.

Data Collected Temperature and rainfall.

Proj Purpose Monitor air temperature and rainfall at the Pago Pago International Airport.

Oranizations associated with this Project:

National Oceanic and Atmospheric Administration
National Climate Data Center

Theme Keywords associated with Project

air temperature
rainfall

Publications associated with this Project:

PARK : **PUHE** First Year: 1976 End Year: Status In work

Project Title NWS COOP

Data Type/Location dayly recordings of precip accumulation

Comments: COOP# 51-8422-6 station metadata available on website.

Data Collected Precipitation 12/1976

Proj Purpose Precipitation monitoring

Oranizations associated with this Project:

National Climate Data Center

Theme Keywords associated with Project

rainfall

Publications associated with this Project:

PARK : **USAR** First Year: End Year: Status In work

Project Title University of Hawaii sea level center

Data Type/Location st#028 SAIPAN Mariana Islands 15 14N 145 45E
st#053 GUAM U.S.A. Trust 13 26N 144 39E; Years of QC data: 1948-2003; completeness index 92%; data contributor: NOS
st#056 PAGO PAGO U.S.A. Samoa 14 17S latitude; 170 41W longitude; Years of QC data: 1948-2003; completeness index: 95%; data contributor: NOS
st#057 HONOLULU U.S.A. Hawaii 21 18N 157 52W; Years of QC data: 1905-2003; completeness index:98%; data contributor: UH Sea Level Center. Past Honolulu data: 1877-1892 QC data with completeness index of 32%; data contributor: NOS
st#059 KAHULUI U.S.A. Hawaii; 20-54N latitude; 156-28 W Longitude; years of QC data: 1950-2003; completeness index:92%; data contributor: NOS
st#060 HILO U.S.A. Hawaii 19 44N latitude 155 04W longitude; Years of QC data: 1927-2003; completeness index: 81%; Data contributor: NOS
st#??? Kawaihae; 20-02 N Latitude, 155-50W Longitude; Years of QC data: 1989-2003; completeness index: 87%; data contributor: NOS

Comments: These sites may not be located in the park but are relevant to the parks. Parks include: WAPA, AMME, USAR, NPSA, PUHE, and PUHO, and maybe HALE

Data Collected sea level

Proj Purpose The University of Hawaii Sea Level Center (UHSLC) is a research facility of the University of Hawaii/NOAA Joint Institute for Marine and Atmospheric Research (JIMAR) within the School of Ocean and Earth Science and Technology (SOEST). The UHSLC originated as the TOGA Sea Level Center under the leadership of Professor Klaus Wyrtki of the University of Hawaii, Department of Oceanography. The center was a natural extension of Professor Wyrtki's pioneering research on the El Nino Southern Oscillation in the Pacific Ocean. Under the current direction of Dr. Mark Merrifield, the mission of the UHSLC is to collect, process, distribute, and analyze in-situ tide gauge data from around the world in support of climate research. Primary support for the UHSLC comes from NOAA's Office of Global Programs (OGP). Funding is also provided by NASA under the JASON program for the development of In Situ Tide Gauge/GPS Stations for Monitoring the Temporal Drift of Satellite Altimeters. The UHSLC also hosts the Joint Archive for Sea Level (JASL), a collaborative effort with the National Oceanographic Data Center (NODC).

Oranizations associated with this Project:

University of Hawaii/NOAA Joint Institute for Marine and Atmospheric Research (JIMAR)

University of Hawaii Sea Level Center (UHSLC)

University of Hawaii School of Ocean and Earth Science and Technology (SOEST)

Theme Keywords associated with Project

sea level

Publications associated with this Project:

Topic Coral Reefs

PARK : **ALKA** First Year: 1997 End Year: Status In work

Project Title Hawaii Coral Reef Assessment and Monitoring Program (CRAMP)

Data Type/Location CRAMP has several sites located in the ALKA corridor, including coral reef monitoring sites at Kawaihae, Nenue Pt, Laaloa, and Kaapuna.
Two types of protocol are utilized by CRAMP: Monitoring Protocol and the Rapid Assessment Technique (RAT). The RAT is simply an abbreviated version of the Monitoring Protocol and is a rapid method for describing spatial relationships. The RAT lacks the statistical power of the Monitoring Protocol to detect change in the benthos, but is a more cost-effective method for answering certain questions on the status of coral reefs.
RAMP has developed standardized coral reef assessment and monitoring methods that provide scientifically rigorous biological data for corals and fishes but not other ecosystem components, including other invertebrates and algae. Transects are at three and nine meter (10 and 30 feet) depths, which does not encompass extensive areas of reef development below these depths.
Detailed methods can be found here: http://cramp.wcc.hawaii.edu/Overview/3._Methods/3._Site_Survey_Protocol/

Comments: created by Raychelle 27 June 2005; needs more information regarding data capture and keyword place names

Data Collected

Proj Purpose CRAMP is a research program designed to identify the controlling factors, both natural and anthropogenic, contributing to the stability, decline, or recovery of Hawaiian reefs. CRAMP has developed a standard coral reef assessment and monitoring methodology in achieving its goals. CRAMP is an integrated state-wide program with a common data base and rapid information dissemination system that provides the means for managers and researchers to detect and respond appropriately to environmental threats on Hawaiian reefs.
The Hawaii Coral Reef Assessment and Monitoring Program (CRAMP) was developed during 1997-98 by leading coral reef researchers, managers and educators in Hawaii. The CRAMP experimental design enables us to detect changes on coral reefs and increase our understanding of the controlling factors (natural and anthropogenic) influencing reef stability, decline and recovery. The design was further refined during the international "Hawaii Coral Reef Monitoring Workshop" organized by the Division of Aquatic Resources (DAR) in conjunction with the East-West Center and held in Honolulu during June 9-12, 1998 (Maragos and Grober-Dunsmore, 1999).

Oranizations associated with this Project:

- Hawaii Coral Reef Assessment and Monitoring Program
- Oceanic Institute
- Hawaii Institute of Marine Biology, (UHM)

Theme Keywords associated with Project

- coral reef

Publications associated with this Project:

- Brown, E., E. Cox, B. Tissot, K. Rodgers, W. Smith, P. Jokiel, and S.L. Coles. 1999. Draft Evaluation of benthic sampling methods considered for the Coral Reef and Monitoring Program (CRAMP) in Hawaii: 25.
- Brown, E., E. Cox, P. Jokiel, K. Rodgers, W. Smith, B. Tissot, S.L. Coles, and J. Hultquist. 2004. Development of benthic sampling methods for the Coral Reef Assessment and Monitoring Program (CRAMP) in Hawaii. Pacific Science 58: 145-158.
- Brown, E. 1999. Long term monitoring of coral reefs on Maui, Hawaii and the applicability of volunteers, p. 131-146. In: Proceedings of the Hawaii Coral Reef Monitoring Workshop, June 9-11, 1998, Honolulu, Hawaii. J. E. Maragos and R. Grober-Dunsmore (eds.).
- Jokiel, P. L., E. K. Brown, A. Friedlander, S. K. Rodgers, and W. R. Smith. 2001. Hawaii Coral Reef Initiative Coral Reef Assessment and Monitoring Program (CRAMP) Final Report 1999-2000. Hawaii Coral Reef Initiative. 66pp.
- Jokiel, P. L., E. K. Brown, A. Friedlander, S. K. Rodgers, and W. R. Smith. 2004. Hawaii Coral Reef Assessment and Monitoring Program: Spatial patterns and temporal dynamics in reef coral communities. Pacific Science. 58:159-174.
- Jokiel, P. L., and E. Cox. 1996. Assessment and monitoring of US coral reefs in Hawaii and the central Pacific, p. 13-18. In: A coral reef symposium on practical, reliable, low cost monitoring methods for assessing the biota and habitat conditions of coral reefs. M. P. Crosby, G. R. Gibson, and K. W. Potts (eds.). National Oceanic and Atmospheric Administration Office of Coastal Resource Management, Silver Spring, Maryland.

PARK : **ALKA** First Year: 1992 End Year: Status In work

Project Title Quantitative Underwater Ecological Surveying Techniques (QUEST) coral reef monitoring at Puako

Data Type/Location

Comments:

Data Collected data collected on seaweed, coral, non-coral invertebrates and fishes at Puako during the month of May, annually. temperature at 6, 13, 30 and 50m

Proj Purpose QUEST is a course offered at the University of Hawaii-Hilo campus which focuses on ecological monitoring of coral reefs using SCUBA. The course takes place during the last two weeks of May. Students stay at the University of Hawaii at Hilo dorms for four days of course work, move to Puako on the South Kohala coast for five days of field work and data collection, and then return to Hilo for four days of data analysis, report writing, and presentations.

Oranizations associated with this Project:

University of Hawaii - Hilo

Theme Keywords associated with Project

coral reef

Publications associated with this Project:

PARK : **ALKA** First Year: 1989 End Year: Status In work

Project Title he Natural Energy Laboratory of Hawaii Authority (NELHA)Comprehensive Environmental Monitoring Program (CEMP)

Data Type/Location six permananent 200 m transects located off Keahole Point coinciding with CEMP water quality monitoring sites

Comments: entry created by raychelle 27 June 05; NEED MORE INFORMATION ON THE DATA;

Data Collected Data on the physical structure of the benthos, coral reef communities, and macroinvertebrate composition are collected. Marine Research Consultants monitored between August 1991 through May 1995 and November 1997 through November 1999 while Oceanic Institute conducted the monitoring from 1995 to 1997.

Proj Purpose monitor benthic communities to ensure no impact from onshore discharge of seawater and aquaculture effluent

Oranizations associated with this Project:

Natural Energy Laboratory of Hawai`i Authority

Theme Keywords associated with Project

coral reef

water quality

Publications associated with this Project:

Dollar, S. 2001. Benthic marine biota monitoring program at Keahole Point, Hawaii. Prepared for The Natural Energy Laboratory of Hawaii Authority, Honolulu, Hawaii.

PARK : **ALKA** First Year: End Year: Status In work

Project Title Reef Check

Data Type/Location The original Reef Check methods were designed to be carried out once per year at each site. This level of temporal replication is typically sufficient to characterize changes in reef corals and other sessile invertebrates. If there is sufficient manpower, this may be increased to twice per year to get a seasonal update.

For mobile invertebrates and reef fish, however, this frequency of replication is generally considered too low for a meaningful stock assessment at one site (but when repeated at many sites, the snapshot becomes very meaningful). It is important to recognize that the sample size used in one Reef Check survey is robust with respect to the parameters measured.
What allows the survey to be carried out quickly is that there are relatively few parameters measured and no temporal replicates.

To use Reef Check methods for long-term monitoring of fish and mobile invertebrates, additional temporal replicates should be made of the fish and invertebrate belt transects. A pilot study could be carried out to determine the variability of fish and invertebrate populations at a given location. A suggested rule of thumb would be to carry out three replicate surveys at each site (i.e. three repeat surveys of one transect deployment), and then to resurvey each site at quarterly intervals. If the taxonomic requirements are not increased too much, this higher intensity survey could still be accomplished by recreational divers.

The core methods include four spatial replicates along the transect line. Given the low taxonomic specificity in the methods (typically family level), these replicates are sufficient to capture variability within one site, and the overall 100 m length of the sample is robust. However, it is desirable to measure variability at several sites within "the area of interest." Thus for long-term monitoring within say, a 1 km wide bay, a set of three to five sites might be used.

The core methods include two transects with the deepest located at a maximum allowable depth of 12 m. The Reef Check program does not accept data obtained from deeper areas for two reasons: safety considerations and the fact that reefs do not extend below this depth in many parts of the world making regional and global comparisons difficult.

However, in areas where it is important to record information at greater depths, a third or forth transect could of course be surveyed and the information used locally. Although these data will not be included in the annual Reef Check report, they could be submitted directly to ReefBase.

Comments: While there are limitations on the scope and quality of data collected it can be argued that for many reefs where no information exists, some information is better than none.
No data is collected within any of the NPS parks, however, there are teams located on Guam, Saipan, American Samoa, the Island of Hawaii, and Maui and therefore this record pertains to ALKA, PUHE, PUHO, KAHO, HAVO, HALE, KALA, AMME, WAPA and NPSA

Data Collected

Proj Purpose Reef Check is an international program that works with communities, governments and businesses to scientifically monitor, restore and maintain coral reef health. Reef Check objectives are to: educate the public about the coral reef crisis; to create a global network of volunteer teams trained in Reef Check s scientific methods who regularly monitor and report on reef health; to facilitate collaboration that produces ecologically sound and economically sustainable solutions; and to stimulate local community action to protect remaining pristine reefs and rehabilitate damaged reefs worldwide.

Oranizations associated with this Project:

Reef Check

Theme Keywords associated with Project

coral reef

marine fish

Publications associated with this Project:

Hodgson, G. What is the Purpose of Monitoring Coral Reefs in Hawaii? Proceedings of the Hawaii Coral Reef Monitoring Workshop - A tool for management. June 9-11, 1998. East-West Center, Honolulu, HI, USA.

Hodgson, G. and C.M. Stepath. Using Reef Check for long-term coral reef monitoring in Hawaii. Proceedings of the Hawaii Coral Reef Monitoring Workshop - A tool for management. June 9-11, 1998. East-West Center, Honolulu, HI, USA.

Raymundo, L.J. and M. Ross. 2001. Reef Check Philippines: Building Capacity for Community-Based Monitoring. Presented at ICRI Regional Workshop for East Asia.

Hodgson G., Mohajerani L., Liebeler J., Ochavillo D., Shuman C. (2003).MAQTRAC: Marine Aquarium Trade Coral Reef Monitoring Protocol

PARK : **AMME** First Year: 2000 End Year: Status In work

Project Title CNMI Nearshore reef monitoring program - CNMI Inter-Agency Marine Monitoring Team (MMT)

Data Type/Location 9 sites are being monitored, including one offshore from the park, Managaha Reef. These nine sites were selected based on their potential disturbances and sources of stress for coral reefs.
For each site 3 50m transects laid parallel to shoreline and marked w/sediment trap holder and re-bar driven into reef. Once finished each site marked w/gps reading and stored.
Benthic cover evaluated using photo point quadrat method (modified from Cheenis Pacific Company 1992). For each site data collected for each of three 50m transects. Underwater camera was used to take still photographs of .5m quadrats placed at even numbers along the transect line. For each photo the bottom right corner of the quadrat was aligned with the corresponding transect line distance. If major topographic relief existed (>10 ft.) the frame was skipped. Slides were developed and analyzed at the DEQ office by noting the life form under each of the 16 intersecting points for each quadrat. Means, standard deviations, and standard errors were calculated based on the three 50-m replicates, with approximately n=300 individual points per 50-m replicate. The benthic categories chosen for analysis were corals (to generic level), turf algae (less than 2cm), macroalgae (greater than 2 cm, genus level if abundant), coralline algae, branching coralline algae, all other inverts (grouped together due to lack of abundances), and sand/bare substrate.
CORAL COMMUNITIES:
Coral communities were further examined using the point-quarter method described by Randall et al., (1988). A dive knife was haphazardly tossed 16 times along the three transects. For each toss the distance to the nearest living coral colony was noted for each of four quadrants, as well as the diameter and taxonomic name. This yielded data regarding population densities, species coverage, relative abundances, size distributions, and total coral coverage for any given site.
FISH SURVEYS:
Fish surveys were completed along each of the three 50-m transect lines. In each case, transect lines were set and all divers waited on the boat while a single observer swam along the transect lines recording data. Counts of all fishes were made within 5 meters of each side of the transect line. Fishes were identified to the family level and analyzed as such.
MACROINVERTEBRATES:
All macroinvertebrates were counted within 2 meters of each side of the transect line. This data was presented as abundances per (100-m^2) of reef on each of three transects. The macroinvertebrates were identified to the generic level when applicable, or grouped by life form, depending on abundances.
At each site a list of all fishes and scleractinian corals observed was created. Coral nomenclature was based upon Veron (2000), and fish nomenclature was based upon Myers (1999).
SEDIMENTATION AND WATER QUALITY PARAMETERS:
Sedimentation rate data were only collected from selected sties, where sediment loads were potentially a concern. In each case, two sediment traps were placed at the beginning of each of three 50-m transect lines, for a total of six traps per site. Traps were deployed for 3-4 weeks before collection and subsequent analysis. Sediment samples were dried and weighed at the DEQ laboratory for total sediment content. Sediment rate data collection was dependent on local weather conditions and site accessibility. Water quality samples were taken from sites whenever the opportunity existed and analyzed for pH, salinity, temperature, turbidity, dissolved oxygen, and total phosphates.

Comments: Not conducted inside any park boundaries. This record was included because coral reefs, fishes in marine environment are important to the park.

Data Collected benthic cover, coral communities, fish abundance, macroinvertebrate abundance, sedimentation rates & other water quality parameters.

Proj Purpose long-term coral reef monitoring. Data included in this report concerns benthic coverage, coral communities, fish and macroinvertebrate abundances, coral and fish biodiversity, sedimentation rates (where applicable), and water quality analysis. These criteria were selected because they are most likely to reflect changes in the reef communities of the CNMI.

Oranizations associated with this Project:

- Commonwealth of Northern Marianas Islands - Department of Environmental Quality
- Commonwealth of the Northern Mariana Islands Division of Fish and Wildlife
- Commonwealth of the Northern Mariana Islands - Coastal Resources Management

Theme Keywords associated with Project

- coral reef
- fish
- macroinvertebrates
- marine fish
- sedimentation
- water quality

Publications associated with this Project:

- NBibKey 591385 Houk, P. State of the reef report for Saipan Island, Commonwealth of the Northern Mariana Islands

PARK : **AMME** First Year: End Year: Status In work

Project Title Saipan Lagoon Monitoring Program

Data Type/Location Site #NL12 associated with AMME

Comments: adjacent to the park; need more info from Houk/Leslie?

Data Collected lagoon benthic communities (?) such as seagrass

Proj Purpose The Saipan Lagoon Monitoring Program is an ongoing effort between the DEQ and CRM. Our goal is to document the present status of the Saipan Lagoon using qualitative and quantitative measures. Our final goal is to produce a complete habitat map of the lagoon that includes data regarding the present status of each region. This information will be used to help DEQ, CRM, decision makers, other environmental managers, and the public to understand where upland pollution concerns are greatest. Also, these data can be used to assess the success or failure of future management strategies and infrastructure that will be used.

Oranizations associated with this Project:

Commonwealth of Northern Marianas Islands - Department of Environmental Quality

Commonwealth of the Northern Mariana Islands - Coastal Resources Management

Theme Keywords associated with Project

benthic

coral reef

water quality

Publications associated with this Project:

Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report. DEQ May 2004. Houk, P. (ed).

PARK : **KAHO** First Year: End Year: Status In work

Project Title Reef Environmental Education Foundation (REEF)

Data Type/Location

Comments: Entry created by raychelle 27 June 05; DO NOT DELETE as this entry also related to KALA - two sites located at: site 4304, the North side Molokai the North side Molokai (Ilio Pt-Halava; and site 43040001 North Shore Cliffs (Wailau Valley). And PUHO, there is a site located at PUHO.
NPSA: First REEF surveys were Nov 04 and official launch end of 05.

Data Collected

Proj Purpose REEF was founded in 1990, out of growing concern about the health of the marine environment, and the desire to provide the SCUBA diving community a way to contribute to the understanding and protection of marine populations. REEF achieves this goal primarily through its volunteer fish monitoring program, the REEF Fish Survey Project. Participants in the Project not only learn about the environment they are diving in, but they also produce valuable information. Scientists, marine park staff, and the general public use the data that are collected by REEF volunteers.

Oranizations associated with this Project:

REEF

Theme Keywords associated with Project

coral reef

marine fish

Publications associated with this Project:

PARK : KALA First Year: 2005 End Year: Status Planned

Project Title Coral reef monitoring program

Data Type/Location no data collected to date

Comments: would be monitoring in the park.

Data Collected no data collected to date, in the planning stages

Proj Purpose A coral reef monitoring program is being initiated within KALA in 2005 that will focus on coral abundance (percent cover), density of other subtidal macroinvertebrates, algal abundance (percent cover), and fish assemblage characteristics (species richness, abundance, biomass, and diversity). Sampling protocols are currently being developed in conjunction with other PACN parks and will most likely resemble the statewide CRAMP protocol (Jokiel et al. 2004). Utilizing similar protocols to collect standardized metrics (e.g., percent cover) will enable comparisons at a larger spatial scale.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

coral reef

Publications associated with this Project:

PARK : KALA First Year: 2004 End Year: Status In work

Project Title Coral Recruitment Monitoring

Data Type/Location Our recruitment sampling apparatus consists of a 2-limbed "tree" with each branch holding one pair of PVC recruitment plates (10cm x 10cm) arranged in a horizontal "sandwich". Plates are deployed in June and retrieved 3 months later in the first week of September. Plates will be microscopically examined for number of recruits, taxonomy and size. Three sites were established within the park boundaries at a depth of 40' (12m). Each site has 5 settlement plate "trees" with 4 plates on each tree. A total of 60 plates will be analyzed for coral recruits each year over a 3 year period.

Comments:

Data Collected # of recruits, taxonomy, size. Started in 2004.

Proj Purpose To assess spatial and temporal patterns of coral recruitment at Kalaupapa and the provide baseline data on the identity of coral recruits

Oranizations associated with this Project:

Theme Keywords associated with Project

coral reef

recruitment

Publications associated with this Project:

PARK : **NPSA** First Year: 1995 End Year: Status In work

Project Title Coral Reef Ecosystem Monitoring Program

Data Type/Location Expert fish and coral surveys conducted every 3-5 years include Park boundaries. Reef fishes surveys 5x50m belt transets at 10m depth. Point-based method for habitat description. Coral surveys 20x.05m belt transects on reef slope at 10 m depth.

Comments: Short-term monitoring?

Data Collected Quantitative surveys of coral and reef communities (at the species level) and key macroinvertebrates (giant clams and COTS).

Proj Purpose Monitor the coral reef ecosystem.

Oranizations associated with this Project:

Am Samoa Department of Marine and Wildlife Resources

Theme Keywords associated with Project

benthic

coral reef

fish

macroinvertebrates

Publications associated with this Project:

NBibkey ID 571900. Fisk, David and Charles Birkeland. 2002. Status of coral communities on the volcanic islands of America Samoa.

NBibkey ID 571885. Green, Alison. 2002. Status of coral reefs on the main volcanic islands of American Samoa: a resurvey of long term monitoring sites, (benthic communities, fish communities, and key macroinvertebrates).

NBibkey ID 571896. Cornish, A. S. and D. T. Wilson. 2002. The American Samoan coral reef monitoring program.

NBibkey ID 99969. Mundy, Craig. 1996. A quantitative survey of the corals of American Samoa.

NBibkey ID 118530. Green, Alison. 1996. Status of the coral reefs of the Samoan archipelago.

NBibkey ID 119819. Mayor, A. G. 1924. Structure and ecology of Samoan reefs.

NBibkey ID 58430. Mayor, A. G. 1924. Growth-rate of Samoan corals.

PARK : **WAPA** First Year: 2003 End Year: Status In work

Project Title Assessing coral recruitment as a function of local sedimentation rates

Data Type/Location An array of 50 sediment traps are being monitored w/ water quality stations to monitor temp & light. Coral settling plates will be set out at 30' and 60' at 3 paired locations in the 2 marine units. Total of 96 plates will be monitored for coral recruits.

Comments: Metadata contact: Dwayne Minton, WAPA; Gordon Dicus, HAVO, is developing databases for this project. This is a recent project, but Dwayne Minton, Ecologist at WAPA see this as an important long-term monitoring project for WAPA.

Data Collected Presently the following are being collected every three weeks in sediment traps, (started in June-July)
1) amount of sediment in (g)
2) Percent of organics, percent of terrestrial material
3) grain size determination
The recruitment sampling apparatus consists of a 4-limbed "tree" with each branch holding one pair of PVC recuitment plates (15cm x 15 cm) in both horizontal and vertical positions and plates will be collected every six weeks. Plates are microscopically examined for number of recruits, taxonomy & spatial location on the plate. During peak coral spawning times (summer) plates will be collected & analyzed more frequently.

Proj Purpose Original Project Purposes:
1) Assess spatial and temporal patterns of coral recruitment at WAPA
2) Assess the relationship between sedimentation deposition and coral recruitment rate
3) Provide baseline data on the identity of coral recruits

AGAIN, see notes, as WAPA ecologist sees this project as being a long-term monitoring project for WAPA, with two compentents, the data on sedimentation data collection and the coral recruitment

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

coral reef
nearshore
watersheds

Publications associated with this Project:

Topic Freshwater Biology

PARK : **ALKA** First Year: 1986 End Year: Status In work

Project Title Waikoloa Anchialine Pond Preservation Area

Data Type/Location Anchialine pools in the preservation area

Comments:

Data Collected Since 1986 the water quality and fauna of the remaining pools is reassessed annually; salinity, dissolved oxygen, temperature, total organic carbon, silicate, chlorophyll a, nutrients, and pesticides are monitored along with the abundance of native shrimp.

Proj Purpose Preservation and management of anchialine pool habitat locted within highly developed resort area

Oranizations associated with this Project:

Marine Consultants of Hawaii

Theme Keywords associated with Project

anchialine pools
aquatic invertebrates
water quality

Publications associated with this Project:

PARK : **USAR** First Year: 2000 End Year: Status In work

Project Title State of Hawaii Department of Health stream monitoring

Data Type/Location Halawa stream (upstream and downstream locations)

Comments:

Data Collected Parameters include temperature, dissolved oxygen, pH, nitrogen, phosphorus, turbidity and flow rates.

Proj Purpose The State of Hawaii Department of Health (DOH) monitors local streams for land-based run off and discharge into the Pearl Harbor watershed.

Oranizations associated with this Project:	Theme Keywords associated with Project
State of Hawai`i Department of Health	stream flow streams water quality watersheds

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status Planned

Project Title Freshwater Monitoring: native stream fauna

Data Type/Location

Comments: Not occurring in the park to my present knowledge (rgd); however, could be relevant to park streams as these might be some of only monitoring data that have/will be collected for freshwater streams in Guam.

Data Collected

Proj Purpose The freshwater monitoring project of DAWR is designed to gather long-term, reliable data for watershed management. Species composition, organism density, and habitat characteristics were collected in the rivers identified as experimental and controls were chosen in FY97, using the methods described in the annual report of FY97. The experimental rivers, located above Fena Reservoir included: Almagosa; Maulap; and Sadog. These watersheds were selected because they represent a range of watershed characteristics that may help to determine the impacts of the present and proposed land uses. The control rivers include: Maagas; Manenggon; Pago; and Ylig. [The study was originally set up to look at the effects of the dam on the fauna--especially upstream migration, thus rivers below the dam were designated as controls, and those above the lake as experimetnal.

The project has a second aim, to heighten public interest in native species found in freshwater ecosystems and to develop a recreational fishery based on native species in Guam's rivers. Knowledge of and interest in freshwater species is limited on Guam. To increase awareness of these important organisms and their habitats, educational materials, such as a field guide and posters, need to be developed. Additionally, some native species, such as the flagtail Kuhlia rupestris, are ideal candidates for a recreational fishery.

Oranizations associated with this Project:	Theme Keywords associated with Project
Guam Division of Aquatic and Wildlife Resources	streams

Publications associated with this Project:

Topic Geology

PARK : **ALKA** First Year: 1949 End Year: Status In work

Project Title Pacific Tsunami Warning Center

Data Type/Location A summary outline of the operational procedures used by PTWC for the issuance of the above bulletins as related to earthquake magnitude on the Richter scale (Ms) is as follows: EARTHQUAKE MAGNITUDE; *PTWC ACTION; A. Mwp greater than Alarm threshold, but less than 6.5; *Provide data and information to USGS/NEIC and/or other participating observatories; B. Mwp equal to or greater than 6.5, but less than or equal to 7.5 (7.0 in the Aleutian Islands); *Issue TSUNAMI INFORMATION BULLETIN, with the evaluation that a Pacific wide tsunami was not generated; C. For events in ATWC's area of responsibility exceeding ATWC Warning threshold, but less than PTWC Warning/Watch threshold; *(1) Monitor pertinent tide stations; *(2) Issue TSUNAMI INFORMATION BULLETIN with initiation of Investigation; *(3) Based on tide station response: *(a) Issue final TSUNAMI INFORMATION BULLETIN; *(b) Issue TSUNAMI WARNING; *(c) Continue investigation by issuing additional TSUNAMI INFORMATION BULLETIN; D. Mwp greater than 7.5 (or 7.0 for Alaska); *(1) Issue REGIONAL TSUNAMI WARNING/WATCH BULLETIN. Issue E/Q ADVISORY or WATCH for State of Hawaii (see note below); *(2) Monitor pertinent tide stations; *(3) Based on tide station response: *(a) Issue CANCELLATION of REGIONAL TSUNAMI WARNING/WATCH BULLETIN; *(b) Issue PACIFIC-WIDE TSUNAMI WARNING BULLETIN; *(c) Continue investigation by issuing additional REGIONAL TSUNAMI WARNING/WATCH BULLETINS until the tsunami warning/watch is canceled; (4) On issuance of a PACIFIC-WIDE TSUNAMI WARNING, continue investigation by issuing TSUNAMI WARNING BULLETINS until the tsunami warning/watch is canceled.

Comments: This pertains to all eleven parks in the PACN: ALKA, AMME, WAPA, NPSA, USAR, PUHE, PUHO, KAHO, KALA, HAVO & HALE.

Data Collected The PTWC issues four basic types of information, as summarized below:

A. Pacific-wide Tsunami Warning Bulletin - A message issued to all participants on a Pacific-wide basis after confirmation has been received that a tsunami capable of causing destruction beyond the local area has been generated and poses a threat to the coastal population for the entire Pacific Basin. Each hour updated information will be sent until the Pacific-wide Tsunami Warning is canceled.

B. Regional Tsunami Warning/Watch Bulletin - A message issued initially using only seismic information to alert all participants of the probability of a tsunami and advise that a tsunami investigation is underway. The area placed in Tsunami Warning status will encompass a 3-hour tsunami travel-time relative to the time of message issuance . Those areas within a 3 to 6-hour tsunami travel-time will be placed in a Watch status. A Tsunami Warning/Watch will be followed hourly by additional bulletins until it is either upgraded to a Pacific-wide Tsunami Warning or is canceled.

C. Tsunami Information Bulletin - A message issued to advise participants of the occurrence of a major earthquake in the Pacific or near-Pacific area, with the evaluation that either (a) A Pacific-wide tsunami was not generated based on earthquake and historical tsunami data. This will be the only bulletin issued. No Pacific-wide tsunami warning is in effect; or (b) An investigation is underway to determine if a Pacific-wide tsunami has been generated. Additional bulletins will be issued hourly or sooner as information becomes available. No Pacific-wide tsunami warning is in effect; or (c) No destructive Pacific-wide tsunami threat exists. However, some areas may experience small sea level changes. This will be the final bulletin issued unless additional information becomes available. No Pacific-wide tsunami warning is in effect.

If the event occurs in ATWC's area of responsibility and exceeds the ATWC Regional Warning threshold but is less than the PTWC Warning/Watch threshold an investigation will be initiated by PTWC and additional Tsunami Information Bulletins will be issued until the investigation is concluded.

D. Tsunami Communication Test - Test messages are issued by PTWC at unannounced times on a monthly basis to determine writer-to-reader delays in disseminating tsunami information, to test the operation of the warning system by the evaluation of two-way communications with interactive personnel response, and to keep communication operating personnel familiar with the procedures for handling message traffic pertaining to the TWS .

Proj Purpose The operational objective of the TWS in the Pacific is to detect and locate major earthquakes in the Pacific region, to determine whether they have generated tsunamis, and to provide timely and effective tsunami information and warnings to the population of the Pacific to minimize the hazards of tsunamis, especially to human life and welfare. To achieve this objective, the TWS continuously monitors the seismic activity and ocean surface level of the Pacific Basin.

Oranizations associated with this Project:	Theme Keywords associated with Project
Pacific Tsunami Warning Center	geology

Publications associated with this Project:

PARK : **AMME** First Year: 1980 End Year: 2004 Status In work

Project Title National Volcanic Ash Advisory Center (VAAC)

Data Type/Location Global satellite monitoring

Comments: No PI contact - ongoing computer-based monitoring program at NOAA, see website for more info. Applies to ALL parks.

Data Collected Products:
Volcanic Ash Advisories (VAA)
The current VAA page is updated with each new advisory. When we can clearly see a plume of ash in satellite Imagery, it is graphically depicted, and sent to our message page.
Sample - From Soufriere Hills
A Graphic representation of the ash plume as seen on satellite imagery is attached to the message when available, but only on the Internet. (Graphic Sample).
After 15 days on the current page, VAA Messages are Archived by year. The current year archive is updated daily shortly after midnight UTC. Past Archives: 1999 ; 2000 ; 2001
Volcanic Ash Forecast Transport and Dispersion (VAFTAD) Model
This is a graphical forecast tool produced by NCEP which has been recently added to our web site. These operational VAFTADs are maintained on our site for approximately 15 days.
The VAFTAD Sample is from Soufriere Hills. It is part of a Paper presented at the Third Caribbean/South American Regional Air Navigation Meeting (abbreviated CAR/SAM/RAN/3) entitled Operations Of The Washington Volcanic Ash Advisory Center.
VAFTADs are also placed on the Internet by The Air Resources Lab (ARL) Here's a link to the current VAFTAD on their site (if one is current). They also run hypothetical VAFTADs.

Proj Purpose The National Center for Environmental Prediction (NCEP) of the National Weather Service (NWS) and the Satellite Analysis Branch (SAB) of the National Environmental Satellite, Data and Information Service (NESDIS), are jointly responsible for the activities of the Washington VAAC located in Camp Springs, Maryland. The Satellite Analysis Branch is responsible for monitoring all available satellite imagery for volcanic ash plumes and issuing Volcanic Ash Advisories (VAA). The National Center for Environmental Prediction is responsible for issuing Volcanic Ash Forecast Transport and Dispersion (VAFTAD) Models. Operation of the Washington Volcano Ash Advisory Center (VAAC) officially began November 1, 1997 although SAB has been monitoring volcanoes as far back as 1980.

Oranizations associated with this Project:	Theme Keywords associated with Project
National Oceanic and Atmospheric Administration	geology

Publications associated with this Project:

PARK : **AMME** First Year: End Year: Status

Project Title Seismic monitoring

Data Type/Location

Comments: Info from Bruce Presgrave (8 Jun 05)

Data Collected There is a network of stations operated by the CNMI Emergency Management Office in Saipan. The stations of the SAPN network are all recorded locally in Saipan, with technical assistance from the Hawaiian Volcanoes Observatory (HVO) in Hawaii.

Proj Purpose

Oranizations associated with this Project:	Theme Keywords associated with Project
Commonwealth of the Northern Mariana Islands Emergency Management Office	geology seismicity

Publications associated with this Project:

PARK : **HAVO** First Year: 1979 End Year: Status

Project Title Gas/ Geochem Monitoring of Kilauea Volcano

Data Type/Location

Comments: CURRENT MONITORING PLAN

Data Collected

Proj Purpose At Kilauea (HAVO), sulfur dioxide (SO2) emission-rate measurements have been collected nearly weekly since 1979 using a correlation spectrometer (COSPEC). These measurements constitute an unusually complete data set. Chemical analysis of gas samples taken from volcanic vents at the summit and rift zones of Kilauea and Mauna Loa has helped to improve models of how these volcanoes release volatiles. Carbon/sulfur ratios are measured about weekly at the summit of Kilauea. A network of continuously monitoring stations using chemical sensors for individual gas species is under development

Oranizations associated with this Project:

Hawaiian Volcano Observatory

Theme Keywords associated with Project

geology

Publications associated with this Project:

PARK : **HAVO** First Year: End Year: Status

Project Title Ground Deformation Monitoring

Data Type/Location

Comments: CURRENT MONITORING PLAN

Data Collected

Proj Purpose HVO collects accurate and timely ground-deformation data to monitor Hawaiian volcanoes. Data from tiltmeters are sampled every 10 minutes and provide the only real-time deformation monitor (HAVO). Continuous Global Positioning Survey (GPS) data are sampled every 30 seconds, but they currently download the data only once a day and calculate one-day average positions (HAVO). HVO conducts periodic (one or more times per year) leveling, GPS, EDM (electronic distance measurement) and dry tilt surveys (HAVO, HALE, PUHO, PUHE, KAHO). Each survey or data point can be compared with previously sampled data to determine accumulated ground deformation and to calculate strain rates or velocities. HVO is currently upgrading its deformation-monitoring program to emphasize real-time monitoring of Mauna Loa and Kilauea. This upgrade includes new installations of borehole dilatometers and tiltmeters, new installations of continuously recording GPS receivers, improved data logging and telemetry, and development of strain analysis and pattern recognition software.

Oranizations associated with this Project:

Hawaiian Volcano Observatory

US National Park Service

Theme Keywords associated with Project

Publications associated with this Project:

PARK : HAVO First Year: End Year: Status

Project Title Seismic Monitoring of Hawaiian Volcanoes

Data Type/Location Various seismic stations on the islands of Hawai`i and Maui, national seismic networks (Advanced National Seismic System

Comments: Paul Okubo (okubo@usgs.gov) monitoring also takes place globally by USGS, including AMME, NPSA, WAPA, HALE, PUKE, PUHO, USAR, ALKA, KAHO, and KALA (all PACN parks), this pretty much goes for all volcanic activity, the USGS' job in a broad sense is to monitor for such activity on all American lands and interests. CURRENT MONITORING PLAN

Data Collected

Proj Purpose Seismic monitoring of the active Hawaiian volcanoes began in 1912. Since then, the seismographic network operated and maintained by HVO has expanded to over 60 stations on the Big Island. Data from remote stations are continuously telemetered in real-time to HVO. HVO's network coverage is most dense on Kilauea (Parks: HAVO). A sparser network of stations covers Mauna Loa and the other active volcanoes, Lo`ihi and Hualalai (Parks: PUHE, PUHO, KAHO). The most complete historical, empirical data on location of earthquake epicenters with attributes information for date, depth and magnitude for the other islands might be available from the USGS National Earthquake Information Center (NEIC) (Parks: HALE, KALA).

Oranizations associated with this Project:

Hawaiian Volcano Observatory

US National Park Service

Theme Keywords associated with Project

geology

Publications associated with this Project:

PARK : HAVO First Year: End Year: Status

Project Title Volcanic Activity Monitoring, Current Eruption monitoring, Hawaii Volcanoes National Park

Data Type/Location mapping of lava flows, sampling of new lava, aerial reconnaissance of volcanic activity.

Comments: CURRENT MONITORING PLAN

Data Collected for the current eruption much data is collected near the Puu Oo cone.

Proj Purpose Geologists at HVO track the advance of active lava flows using GPS mapping aids and aerial photographs. Observatory scientists keep detailed descriptions and photo archives, including still and video images, to better understand and forecast future eruptions (Parks: HAVO). Lava, spatter, and other erupted material are sampled for study of their geochemical and mineralogical composition (Parks: HAVO, HALE). Geodetic surveys are taken to precisely depict the growth of flow fields, vents and changes in ground deformation (Parks: HAVO, HALE, PUHO, PUHE, KAHO). In addition, they monitor the volcanoes through direct visual observations of eruptive activity, changes in electrical and magnetic properties, and changes in gravitational attraction (Parks: HAVO). Weekly monitoring(visual and physical sampling and mapping) of current eruption at Puu Oo vent.

Oranizations associated with this Project:

Hawaiian Volcano Observatory

US National Park Service

Theme Keywords associated with Project

geology

Publications associated with this Project:

PARK : **NPSA** First Year: 1993 End Year: Status In work

Project Title Seismic monitoring

Data Type/Location AFI: Afiamalu (-13.9094 -171.7772 706.0); opened 1957 (WWSS opened 19621101. DWSS 19810515-19911117. IU opened 19930824.)
API: Apia (-13.8072 -171.7750 2.0); opened 1902

Comments: There were no seismic stations located in American Samoa; however, the closest seismic stations are located at the neighboring islands of Samoa.

Data Collected Seismograph stations record wave arrivals from earthquakes, from which arrival times and amplitudes can be determined, which agencies such as ours combine with data from other stations to determine earthquake locations and magnitudes. Basically, seismograph stations provide the raw data from which observatories or agencies determine earthquake parameters.

Proj Purpose To determine earthquake locations and magnitudes.

Oranizations associated with this Project:

Institute of Geological and Nuclear Sciences, Lower Hutt, New Zealand

National Earthquake Information Center, Golden, USA (USGS)

Theme Keywords associated with Project

geology

seismicity

Publications associated with this Project:

NBibkey ID 590311. Pacific Country Report. 2003. Sea Level & Climate: Their Present State. Samoa.

PARK : **WAPA** First Year: 1914 End Year: 1944 Status Complete

Project Title Seismic Monitoring

Data Type/Location Agana (13.4717 latitude and 144.7483 longitude and 0.0 elevation)

Comments: Historical Data Set.

Data Collected seismicity from 1914 to 1944. It was destroyed during WWII

Proj Purpose

Oranizations associated with this Project:

Manila Observatory, Ateneo de Manila Univeristy

Theme Keywords associated with Project

seismicity

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status In work

Project Title National Earthquake Information Center (NEIC) seismic monitoring station

Data Type/Location The Guam Observatory is a facility of the USGS, and the observer there is Mr. Paul Hattori. Geomagnetic and seismological instruments are in operation at the observatory, and in the past, Paul read the daily seismograms from GUMO, PJG and GUA and sent those data in first by telex and then later by email. Paul still has access to a local copy of the GUMO data, although he no longer reads the arrival times and sends them in, and last I talked to him, he said they still run PJG and GUA intermittently. If you are looking for information about how a USGS seismological observatory operates - or, perhaps, how it operated in the past before the data were telemetered here, I suggest you contact Paul.
GUMO (13.5891 latitude; 144.8686 longitude; 99.0 elevation) opened June 1975 (19750616) SRO 19750616. IU opened 19910708. Coords corrected slightly 1994. (the latter two abbreviations I am waiting for a response from USGS 8 June 05): THIS IS THE ONLY ONE CURRENTLY READILY AVAILABLE (per Bruce Presgrave 8 June 05)
GUA: Santa Rosa (13.5397 latitude; 144.9141 longitude; 287.0 elevation) opened in April 1963 (196304) with intermittent operation since July 1997 (19970730) and IDA 1979 to 1995 (197906-199507)
PJG: Potts Junction (13.5893 latitude; 144.8684 longitude; 199.0 elevation) opened May 1957 (195705) moved slightly 1983 (19830200) and coordinates corrected slightly 1994.

Comments: While the seismic station is not located within the park; seismic activity does potentially affect the park's natural resources;therefore it is included in this database. Waiting for information about the abbreviations above from USGS as well as how to obtain the data (08 June 05). Contacted Bruce Presgrave presgrave@usgs.gov 8 Jun 05. rgd.

Data Collected Seismograph stations record wave arrivals from earthquakes, from which arrival times and amplitudes can be determined, which agencies such as USGS/NEIS combine with data from other stations to determine earthquake locations and magnitudes. Basically, seismograph stations provide the raw data from which observatories or agencies determine earthquake parameters.

Proj Purpose

Oranizations associated with this Project:

US Geological Survey

National Earthquake Information Center, Golden, USA (USGS)

Theme Keywords associated with Project

seismicity

Publications associated with this Project:

Topic Invasive Species

PARK : **AMME** First Year: End Year: Status In work

Project Title Brown tree snake monitoring

Data Type/Location Saipan - 150 in port areas. Presently traps are being focused into one area near seaport and the airport. There are 20 traps in the AMME wetland.
Tinian - ~30 at seaport.
Rota - ~ 30 at seaport.

Research by the Biological Resources Division of the U.S. Geological Service has produced several designs for a barrier that Brown Tree Snakes cannot breach. In the CNMI the barriers are used to enclose a cargo quarantine yard at the ports of entry. Cargo is placed inside the yard for up to three nights. Along the inside of the barrier snake traps are placed at regular intervals. The idea is that snakes exit the cargo, run into the barrier and follow the edge and running into the traps. While not 100% effective this technique places a snake in an area with a much higher probability of being trapped than out in the forest. This area also provides a suitable place for cargo inspection by Sniffer Dogs.
Presently there are snake barriers at the Rota and Tinian seaports. It is planned to construct one for the Saipan port in late 1999 or early 2000.

Saipan has two dog (K-9) teams consisting of one dog and one handler. Handlers are Quarantine personnel. In the future more dog teams will be added to Saipan and also expansion to Tinian and Rota.

Comments: Also awaiting more information on this once DFW contacts me back. There may be a location in the park. Regardless, this monitoring would be important for park resources (i.e., birds)

Data Collected "There is an effective trap in use for Brown Tree Snakes. It consists of a mesh cylinder with one way opening flaps on each end. The snake can get in but cannot get out. To entice the snake into the trap there is a live mouse inside. The mouse is in a wire mesh box so that the snake cannot kill the mouse once inside the trap. The mouse must be fed on a weekly basis. This makes trapping very labor intensive. Never the less, this trap is used extensively on Guam around the sea ports and airport and Guam s Division of Aquatic and Wildlife Resources is using trapping to clear large areas of jungle (>25 hectares) of snakes. We use these traps on Saipan to hopefully capture snakes that have just entered or to locate a rising snake population."

Proj Purpose Brown Tree Snake program actively works to prevent the introduction of this invasive species to the Island's. Personnel and inspection teams are located on Tinian, Rota and Saipan. Saipan houses a kennel where 'sniffer' dogs are trained, mice for trapping purposes are reared, and labs and supplies are maintained. The port of Saipan is also installing a quarantine area for vessel shipments (boats and cargo) that have the potential for unknowingly transporting snakes.

Oranizations associated with this Project:

Commonwealth of the Northern Mariana Islands Division of Fish and Wildlife

Theme Keywords associated with Project

invasive vertebrate

reptile

vertebrates

Publications associated with this Project:

PARK : **HALE** First Year: End Year: Status In work

Project Title Alien Plant Transects in Kipahulu

Data Type/Location Started in 1996-7 and ongoing. Use belt transects that are 50 meters apart. A system of weed monitoring transects begining from the Charlie fence line at 4800 ft on the upper shelf down to at least the Dogleg fence at 2200 ft on the lower shelf are needed to track alien species invasions upward into pristine areas. They are to be laid out on existing trails and USFWS Bird Transects.

Two transects on the upper shelf have been initiated; one on the Central pali trail on June 22-23 1992 by Steve Anderson, Art medeiros and Patti Welton, and one on USFWS Transect #17 on October 20, 1993 by Bill Haus, Larry Olney and Patti Welton and furthered on January 26, 1995 by Paul O Conner and Patti Welton. The lower portions of both these need to be completed to reach the Dogleg fence. Work on the two lower shelf transects still need to begin. One will be at the base of the Central pali on the original USFWS Transect #16 and one along the Palikea Stream trail. Relocation of the top portions of these trails is priority.Four transects running from the Charlie fence to the Dogleg fence will be permanently marked and sampled. The sampling frame will be a belt transect 5 meters wide (2.5m on each side of the center of the trail) with data recorded for each 50 m segment. Each monitoring unit will thus be an area of 250 square meters. At the Charlie fence there will be a metal tag identifying the transect and the beginning as 0 meters. Every subsequent 50 meters there should be another piece of orange and black flagging tape tied to a persistant piece of foliage i.e. sturdy tree, with the transect # and distance from the beginning clearly written with a Sharpie or wax pencil marked i.e.WEED #3-50 m. The transect will be set up by using a hip-chain to measure every 50 m. It is imperative that the hip-chain string be collected after each interval is measured.

Comments:

Data Collected Cover abundance in 8 classes. Frequency is determined by a presence/absence for a species for each 50 meter segment. Elevation Weed Transect #1 was initiated 10/20/93 for stations 0m-1450m and1450m-2600 was done 1/26/95. 0m-2450m was done 9/16/97. On 2/9/05 0-1900m was monitored for kahili ginger only.
Elevation Weed Transect #2 was initiated 6/22-23/93 from 0m-3500m, 10/19/93 from 0-700m, 2/4/98 0-1200m were done, 8/14/01 0m-1900m done
Elevation Weed Transect #3 was initiated 5/19-20/98 from 0m-3800m was done.
Elevation Weed Transect #4 was initiated 10/22/98 0-2150m done, 1/11/98 2150-3600m done

Proj Purpose

Oranizations associated with this Project:

Theme Keywords associated with Project

nonvascular plants

vascular plants

Publications associated with this Project:

PARK : **HALE** First Year: End Year: Status In work

Project Title Argentine ant (Linepithema humile) population monitoring

Data Type/Location Sampling conducted annually.

Comments: Emailed Paul K. 6/21/05- waiting for reply (AC.
CURRENT MONITORING PLAN

Data Collected Measuring extent of populations by sampling presence/absence of ants around periphery of known populations.

Proj Purpose Track extent of Argentine ant infestation in and around Haleakala.

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

invertebrates

Publications associated with this Project:

Krushelnycky, P.D. and Reimer, N.J. 1996. Efforts at control of the Argentine ant in Haleakala National Park, Maui, Hawaii. PCSU Technical Report 109.

PARK : **HALE** First Year: End Year: Status In work

Project Title Incipient invasive plants

Data Type/Location

Comments:

Data Collected ongoing

Proj Purpose

Oranizations associated with this Project: Theme Keywords associated with Project

Publications associated with this Project:

PARK : **HAVO** First Year: 2001 End Year: Status In work

Project Title Two-spotted leafhopper (Sophonia) population monitoring

Data Type/Location Ten yellow sticky cards (whitefly traps) set out at each site near Vespula traps. Checked & replaced monthly.

Comments: CURRENT MONITORING PLAN

Data Collected sites (all with 10 traps, started Jan 2001 except Ainahou & Namakani Paio started Jun 2003)
Hilina Pali shelter
Muliwai Kipuka
Aloha Estates (outside park)
Kulanokuaiki Campground
Mauna Ulu flow
Volcano Transfer Station
Kipuka Ki
Kipuka Puaulu
Olaa Koa Unit & Small Tract
Keamoku
Kulani Boys Home (outside park)
Kulani Cone (outside park)
Namakani Paio
Ainahou Ranch

Proj Purpose Track long-term trends in leafhopper populations in both native and exotic-dominated vegetation types in and near the park.

Oranizations associated with this Project: Theme Keywords associated with Project

US Geological Survey	invertebrates

Publications associated with this Project:

PARK : **HAVO** First Year: 1993 End Year: Status In work

Project Title HAVO Vespula monitoring

Data Type/Location Traps baited with heptyl butyrate attractant checked monthly; wasps in each trap counted, queens counted separately.

Comments: CURRENT MONITORING PLAN

Data Collected site/traps/dates
Hilina Pali shelter: 10, Jul 1999-
Muliwai Kipuka: 10, Jul 1999-
Aloha Estates (outside park): 10, Feb 2000-
Kipuka Nene Campground: 10, Feb 1998-Sep 1999
Kulanokuaiki Campground: 10, Feb 2000-
Mauna Ulu flow: 10, Dec 1997-
Volcano Transfer Station: 10, Jul 1999-
Kipuka Ki: 40, Apr 1996-
Kipuka Puaulu: 40, Apr 1996-
Olaa Koa Unit & Small Tract: 20, Jul 1993-
Keamoku: 20, Jul 1993-
Kulani Boys Home (outside park): 20, Jul 1993-
Kulani Cone (outside park): 20, May 1996-

Namakani Paio: 10, Feb 1998-Jul 1999
Crater Rim Trail: 20, May 1998-Jul 1999
Volcano House: 20, Dec 1997-Jul 1999
Ainahou Ranch: 20, Nov 1997-Jul 1999; 10, Jul-Aug 1999
Kapapala: 20, Nov 1997-Jun 1999; 10, Jul-Sep 1999
Ainapo: 10, Jul-Sep 1999

Proj Purpose Tracking seasonal and year-to-year trends in Vespula populations.

Oranizations associated with this Project:	Theme Keywords associated with Project
US Geological Survey	invertebrates

Publications associated with this Project:

PARK : **NPSA** First Year: 2003 End Year: Status In work

Project Title Monitoring Invasive Trees and Plants

Data Type/Location Invasive plant transects.

Comments: American Samoa Community College has started an inventory and analysis of forest types (one-time project) which entails a land-cover map of all American Samoa of forest types. This includes plot work, one plot is in the Park (Tau). Removal of invasive trees started Dec. 2003 to mid-year 2004. Tavita and VIP team plan to continue to remove invasive trees; however the project is pending until mid-year 2005. American Samoa Invasive Species Team (ASIST) consisting of various agencies in the territory has been established to monitor and remove invasive plant species. In 2004, ASIST conducted a weed survey in the territory and documented the locations.

Data Collected In 2003, distribution and abundance of invasive trees and 2004, GPS coordinates of invasive plant species.

Proj Purpose Monitoring invasive trees and plants in the park and territory.

Oranizations associated with this Project:

National Park of American Samoa

Theme Keywords associated with Project

alien species
invasive plants
invasive trees
weed control
weed distribution

Publications associated with this Project:

NBibkey ID 571876. Space, James and T. Flynn. 2000. Observations on invasive plant species in American Samoa.

NBibkey ID 582854. ASIST. 2004 Invasive Species Survey.

NBibkey ID 171986. Whistler, W. Arthur. 1995. Permanent forest plot data from the National Park of American Samoa.

NBibkey ID 571903. Webb, Edward, and S. Faaumu. 1999. Diversity and structure of tropical rain forest of Tutuila, American Samoa: effects of s

NBibkey ID 585275. Monello, Ryan. 2004. Terrestrial Resource Report National Park of American Samoa.

PARK : **NPSA** First Year: 1997 End Year: Status In work

Project Title Feral Pig Activity Monitoring

Data Type/Location Ten activity transects on Tutuila and three transects on Tau. Goal is to survey at least once a year (all transects) + areas of concern more often. Snares are present throughout the park.

Comments: On Tutuila, feral pig activity seems to be under control and summary counts are no longer being conducted; however feral pig management on Tau needs to be addressed.

Data Collected Yearly summary counts of snared pigs and monitoring signs of activity.

Proj Purpose Monitoring of feral pig activity data collection and ongoing snaring.

Oranizations associated with this Project:

Theme Keywords associated with Project

feral pig
invasive mammals
terrestrial mammals

Publications associated with this Project:

PARK : **USAR** First Year: End Year: Status In work

Project Title Integrated Pest Management Program

Data Type/Location shoreside at the memorial

Comments: Per email from Marshall Owens, sent a follow-up to Merry, and will enter information once obtained. 30 June 05. This monitoring presumably occurs in the park at the visitor center.

Data Collected monitor number/density of mosquitoes, rats & several types of insects

Proj Purpose When the number of an organism defined as a 'pest' species reaches a threshold, action is take.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

alien species

invasive invertebrates

invasive mammals

pest control

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status In work

Project Title Brown tree snake monitoring

Data Type/Location

Comments: emailed usgs for more specific information on their monitoring protocol. They have very general information online. (08 June 05). Information in the project purpose and usefulness are copied and pasted from the usgs website. To my knowledge this monitoring may be conducted outside of the park, but it is relevant to the park resources. I am trying to verify whether there are regular monitoring sites located in any of the park units (8 June 05)

Data Collected

Proj Purpose To reduce the risk of snakes dispersing from Guam, trapping and visual searches are conducted in and around facilities through which air and sea cargo pass. Trapping and other control techniques are also used in patches of natural habitat on Guam where some of the endangered species can be maintained and numbers augmented. Islands of habitat protected by snake-excluding barriers are integral to wildlife conservation efforts on Guam. The use of barriers to reduce snake movements is being expanded to include airfields and sea ports on islands identified as high risk for brown tree snake introduction. Trapping and searches are also being used at port and airport facilities on some of these high-risk islands. Of special concern are islands in the State of Hawaii and the Northern Marianas, because of the high frequency of traffic coming from or through Guam.

Oranizations associated with this Project:

USGS, Ft. Collins

Theme Keywords associated with Project

invasive vertebrate

reptile

Publications associated with this Project:

NONE

NONE

Topic Landscape

PARK : **HALE** First Year: End Year: Status Planned

Project Title Changes in tree line is currently being studied.

Data Type/Location None

Comments: "Both should be LTMP but no study details/project/program currently exist. Lip service has been given and aspects of these may fall under the I&M lanscape/landuse change protocol. Bottom line nothing long term exists on these for HALE." Steve Anderson 7/1/05

Data Collected In progress

Proj Purpose Monitor changes in ecotone boundaries

Oranizations associated with this Project:

Theme Keywords associated with Project

ecotone

Publications associated with this Project:

PARK : **HALE** First Year: End Year: Status Planned

Project Title Repeat photography of scenic vistas

Data Type/Location none

Comments: "Should be LTMP but no study details/project/program currently exist. Lip service has been given and aspects of these may fall under the I&M lanscape/landuse change protocol. Bottom line nothing long term exists on these for HALE." Steve Anderson 7/1/05

Data Collected none

Proj Purpose Comparing change over time

Oranizations associated with this Project:

Theme Keywords associated with Project

repeat photography

scenic vista

Publications associated with this Project:

PARK : **PUHO** First Year: End Year: Status In work

Project Title Visitor use statistics

Data Type/Location counts at entrance station

Comments:

Data Collected ongoing

Proj Purpose Recording and tracking incoming visitors for cultural reasons.

Oranizations associated with this Project:

Theme Keywords associated with Project

Publications associated with this Project:

Topic Marine Ecology

PARK : **KAHO** First Year: 1992 End Year: Status In work

Project Title Acoustic tracking of marine vertebrates

Data Type/Location Acoustic arrays are located offshore of KAHO,and also in NWHI and Maiu (Honolua Bay and Olowalu)

Comments: Techniques applicable toother species since Hawaii acoustic array is in place.

Data Collected monitor large vertebrates (tiger sharks, manta ray, turtles, and trevally)

Proj Purpose Long term acoustic tracking of coastal marine vertebrates

Oranizations associated with this Project:	Theme Keywords associated with Project
University of Hawaii - Manoa	biological marine fish

Publications associated with this Project:

PARK : **NPSA** First Year: 2002 End Year: Status Planned

Project Title Sea Surface Temperature (SST) Monitoring Project

Data Type/Location SST buoys, ocean current drifters, fish belt transects, video transects of benthic habitats.

Comments: Follow-up surveys are proposed every two years. Sample sites are also located near Guam and the Northwest Hawaiian Islands.

Data Collected SST, fish, and corals. First sampling effort was in February 2002. Second sampling effort was in February 2004.

Proj Purpose Monitor SST, fish, and coral in American Samoa.

Oranizations associated with this Project:	Theme Keywords associated with Project
Coral Reef Ecosystems Investigation	algae benthic coral reef drifter fish macroinvertebrates SST

Publications associated with this Project:

NBibkey ID 585274. NOAA. 2004. Oscar Elton Sette Cruise Report.

PARK : **NPSA** First Year: 1985 End Year: Status In work

Project Title Hotspot Satellite Maps Sea Surface Temperature Monitoring

Data Type/Location worldwide

Comments: Applies to ALL parks.

Data Collected Daily recordings of sea surface temperature (SST)

Proj Purpose Monitor sea surface temperatures worldwide via satellites, determine when unseasonably warm temperatures occur, and predict areas where coral bleaching may occur.

Oranizations associated with this Project:

National Oceanic and Atmospheric Administration

Theme Keywords associated with Project

coral bleaching

SST

Publications associated with this Project:

Topic Marine Fish

PARK : **ALKA** First Year: 2001 End Year: Status In work

Project Title Hawaii Marine Recreational Fishing Survey Project

Data Type/Location number, length, weight of fish harvested, catch composition, numbers of people fishing, total number of trips

Comments: need to obtain map of data locations, probably equivalent to harbors and launch ramps
applicable to all HI parks with fisheries concerns but sampling sites may not be in or near park

Data Collected Beginning in 2001, data was collected on fishing effort at shore access points and via telephone interviews

Proj Purpose to understand needs and activities of Hawaii recreational and subsistence fishers to help manage fisheries

Oranizations associated with this Project:

National Marine Fisheries Service

Theme Keywords associated with Project

Publications associated with this Project:

PARK : **KAHO** First Year: 1999 End Year: Status In work

Project Title West Hawaii Aquarium Project (WHAP)

Data Type/Location Surveys began in March 1999 and are conducted on a bimonthly basis. All fish in four 100m^2 are counted.

Comments: ALSO ADD FOR ALKA, PUHE, and PUHO.

Data Collected Distribution and abundance of aquarium fishes in 23 sites since 1998 along west Hawaii coastline in and adjacent to proposed FRAs.

Proj Purpose 1) Estimate impacts of aquarium fish collecting in West Hawaii
2) Evaluate effectiveness of the FRA plan to increase aquarium fisheries
3) Estimate critical habitat characteristics for adult and juvenile aquarium fishes
4) Document recruitment patterns of aquarium fishes

Oranizations associated with this Project:

Washington State University, Vancouver

Hawai'I Division of Aquatic Resources

University of Hawaii - Hilo

Theme Keywords associated with Project

biological

fish

Publications associated with this Project:

Tissot, B. N., W. J. Walsh, and L. E. Hallacher. 2004. Evaluating effectiveness of a Marine Protected Area Network in West Hawaii to increase productivity of an aquarium fishery. Pacific Science. 58:175-188.

Tissot, B. N., and L. E. Hallacher. 2003. Effects of aquarium collectors on coral reef fishes in Kona, Hawaii. Conservation Biology. 17:1759-1768.

PARK : **NPSA** First Year: 2002 End Year: Status

Project Title Monitoring harvests of fish and invertebrates

Data Type/Location Ofu and Olegesa

Comments: Next survey within 5 years.

Data Collected A baseline survey of the subsistence fishery on Ofu has been conducted, and protocols are being developed for other parameters to be monitored. The project was initiated in 2002 and is expected to continue at 5-year intervals.

Proj Purpose Track changes in subsistence fishery

Oranizations associated with this Project:

National Park of American Samoa

Theme Keywords associated with Project

fish

fish harvest

marine fish

Publications associated with this Project:

PARK : **NPSA** First Year: 1980 End Year: Status In work

Project Title Monitoring Fisheries

Data Type/Location Reef fisheries, (creel survey from 1991 to 1995), counting numbers of fishers at 2-hour intervals. Pelagic and bottomfish fisheries, document boat landings started in 1980.

Comments:

Data Collected Summary of species caught, weight, catch per unit effort.

Proj Purpose Monitor catch statistics for territory's pelagic, bottomfish and shoreline reef fisheries.

Oranizations associated with this Project:

Am Samoa Department of Marine and Wildlife Resources

Theme Keywords associated with Project

commercial invertebrate harvest

fish harvest

subsistence

Publications associated with this Project:

NBibkey ID 590123. Bottomfish and seamount groundfish fisheries of the Western Pacific region 2003 - Annual report.

NBibkey ID 590124. Pelagic fisheries of the Western Pacific region - 2003 Annual report.

PARK : **PUHE** First Year: 1979 End Year: 2005 Status In work

Project Title Shark Sightings

Data Type/Location shoreline of Pelekane Bay, generally while accompanying a school tour, no regular observation periods or schedule

Comments: sometimes only 4 or so observations recorded per year, maintainence staff say they see sharks frequently

Data Collected The number and type of sharks, date and time seen, and approximate position is recorded. Water conditions (calm, choppy,
The number and type of sharks, date and time seen, and approximate position is recorded. Water conditions (calm, choppy, other) and weather (clear sky, air temp) and photos are noted. The earliest data sheet is from Oct. 1979 and the most recent from June 2004 (no data between 1982 and 1990).

Proj Purpose note presence of sharks to document use of Pelekane Bay

Oranizations associated with this Project:

Theme Keywords associated with Project

Publications associated with this Project:

PARK : **WAPA** First Year: 1999 End Year: Status In work

Project Title Stock Assessment Surveys of Marine Preserves and Control Sites

Data Type/Location Visual transects and interval counts are used to assess fish species. Video transects were used in fy99. Benthic monitoring to begin in 2004

Comments:

Data Collected Conducting fish counts and timed-swim counts on 36 permanent transects located in reef flat and lagoon habitats in Achang Reef Flat Marine Preserve, Piti Bomb Holes Marine Preserve, Asan Bay, Pago Bay, and Cocos Lagoon, and
Conducting fish counts, timed-swim counts, and video transects on 32 permanent transects located at the 20', 30', 40', and 50' depth contours of the fore reef slopes in Achang Reef Flat Marine Preserve, Piti Bomb Holes Marine Preserve, Asan Bay, and the backside of Cocos Lagoon
Annually, to establish a baseline and subsequently compare data consisting of reef fish density estimates, species composition, size-class distribution, and substrate composition.

Proj Purpose To evaluate the effect on sport fish populations caused by the creation of marine preserves by incorporating the following measures:
1) Conduct video and interval transect surveys within MPAs and control sites.
2) Establish baseline stock assessment surveys to measure the effectiveness of MPAs compared to control sites.

Oranizations associated with this Project:	Theme Keywords associated with Project
Guam Division of Aquatic and Wildlife Resources	marine fish

Publications associated with this Project:

Gutierrez, J. 2000. Stock Assessment Surveys of Marine Preserves and Control Sites. Job Progress Report Research Project Segment FY00.

PARK : **WAPA** First Year: 1982 End Year: Status In work

Project Title Inshore fisheries surveys

Data Type/Location A two-part roving creel survey, effort (or participation) and catch, is performed for both day and night (begun in 1985) to provide sufficient data to allow for
90% confidence limits for the inshore analysis. During an effort survey, a surveyor records all active fishing participation (time of day, location, number of people,

number of gear units, fishing methods, reef zone fished, weather conditions, and surf conditions). Counts are made of fishermen and gear and are used to estimate effort in terms of person-hours (p-hr) and gear-hours (g-hr). The catch survey is of the roving fisherman-intercept type and requires as many interviews for as many fishing methods as possible. The survey variables collected include fishing method, number of fishermen, bait type, number of gear, mesh size, interview time, trip length, species caught, numbers of catch species, and individual weights and lengths.
Catch data is used to estimate overall landings (kg), CPUE, and species composition. (Hensley and Sherwood 1993)
On any given survey (inshore catch or fishermen interview) day, one survey area is randomly selected from either Gun Beach to Adelupe (region I:
locations 1-11), Adelupe to Agat (region II: locations 12-34), or Pago to Merizo (region III:locations 41-71) and inshore data collection is restricted within the selected region.

Comments: Inshore fisheries encompass the coral or nearshore shallow adjacent waters which consists mostly of fringe reefs. "Fishing activity has been monitored since the early 1960's when much of the early information was taken by DAWR conservation officers (law enforcement).
personnel). Monitoring changed over the years, as did fish identification. The early 1960's catch was identified by the Chamoru name of the fish. Problems with catch composition arose because one name could mean any wrasse species, parrotfish would be identified by color (blue, brown, white, and green), and rabbitfish would be identified by at least five names that described the fish by size. As taxonomic skill increased, the catch was reported in increasing detail." (Hensley and Sherwood 1993)

Data are collected in the park. See type and location of sampling above.

Data Collected To identify trends in fishing participation, effort, and catch, the Division of Aquatics and Wildlife Resources (DAWR) has been monitoring day and night coastal fishing activities since FY85. Over this period of time, survey and analysis methodologies have changed in response to fluctuations in budget and staff. In the last several years, however, field survey techniques have been expanded and refined, while estimates of Guam's recreational and subsistence fishing activities have come to be based on more reliable data analysis techniques.

Proj Purpose Effective management of Guam's inshore fishery resources requires accumulating data on the types of fishing methods used, fishing pressure, and annual catch. Objectives are to:
1) To maintain the collection of baseline catch and effort data and identify harvest trends in Guam's inshore fishery.
2) To gather limited biological (opportunistic) data on fishing methods, reef fish species, and habitat for management purposes.

Oranizations associated with this Project:

University of Guam

US National Park Service

Guam Division of Aquatic and Wildlife Resources

Theme Keywords associated with Project

fish harvest

Publications associated with this Project:

Hensley, R.A. and T.S. Sherwood. 1993. An overview of Guam's inshore fisheries. Marine Fisheries Review 55 (2): 129(10)

Pitlik, T.J. 1997. Inshore Fisheries Survey. Fisheries participation, effort, and havest surveys (2430) Job Progress Report Research Project Segment for period covered between October 1, 1996 to September 30, 1997.

Pitlik, T.J. 1998. Inshore Fisheries Survey. Fisheries participation, effort, and havest surveys (2430) Job Progress Report Research Project Segment for period covered between October 1, 1997 to September 30, 1998.

Pitlik, T.J. 1999. Inshore Fisheries Survey. Fisheries participation, effort, and havest surveys (2430) Job Progress Report Research Project Segment for period covered between October 1, 1998 to September 30, 1999.

Pitlik, T.J. 2000. Inshore Fisheries Survey. Fisheries participation, effort, and havest surveys (2430) Job Progress Report Research Project Segment for period covered between October 1, 1999 to September 30, 2000.

Topic Marine Mammals

PARK : **ALKA** First Year: 1999 End Year: Status In work

Project Title Hawaiian Islands Humpback Whale National Marine Sanctuary Ocean Count

Data Type/Location Site locations on the Island of Hawaii along the proposed ALKA corridor include Upolu Point, Old Coast Guard Road, Kapaa Beach Park, Lapakahi State Park, Puukohola Heiau, Mile Marker 7, Hualalai Four Seasons, Keahole Point, Keauhou Lookout, Honaunau Lookout, Hookena Beach Park, Milolii Lookout, Punaluu Beach Park, Kaena Point and Kahena Lookout.

Comments: This entry is also relevant and should be added for PUHE, PUHO, KAHO and maybe HAVO.
Entered by Raychelle 27 June 2005

Data Collected The first count was conducted in February 1996 on O'ahu, with approximately 150 volunteers. In 1999, the Big Island was added to the effort. Kaua'i began participating in 2000 and Kaho'olawe began participating in 2002. To date, the Sanctuary Ocean Count covers 60 sites on four islands, with an enlistment of over 3000 volunteers. Volunteers assist in the data collection procedures and a site leader monitors their work at each site. Data collected during the Ocean Count are screened for consistency and entered into a database for further analysis.

Proj Purpose The Sanctuary Ocean Count was initiated as a means to provide Hawai i residents and visitors with the opportunity to actively participate in evaluating the status of humpback whales in their breeding grounds by conducting a yearly shore-based census during the peak breeding season. Although the census does not claim to provide scientifically accurate results regarding abundance and distribution patterns of humpback whales around the main Hawaiian Islands, it serves as a tool to supplement scientific information gathered from other research activities. The count also serves to promote public awareness about humpback whales and shore-based whale watching opportunities, and to get a sense of how whales use inshore waters on an average peak season day.

Oranizations associated with this Project:

Hawaiian Islands Humpback Whale National Marine Sanctuary (NOAA)

Theme Keywords associated with Project

marine mammals

Publications associated with this Project:

Maldini, D. 2003. Abundance, distribution patterns and habitat use of humpback whales in inshore waters of the islands of Oahu, Kauai, and Kahoolawe. Hawaiian Islands Humpback Whale National Marine Sanctuary. 100 pp

Maldini, D. 2003. Abundance and distribution patterns of Hawaiian odontocetes: Focus on Oahu, 125pp. University of Hawaii, Honolulu.

PARK : **ALKA** First Year: 1988 End Year: Status In work

Project Title Shore based humpback whale counts

Data Type/Location scan surveys of species and number of whales (all species) and vessels observed from observation site overlooking Kawaihae Bay at old ruins.

Comments: Also applicable to PUHE; entry created by Raychelle 28 June 05; Follow-up: data for dscat

Data Collected early February to end of March during peak season during which humpback whales are in Hawaiian waters.

Proj Purpose The goal of these scan sessions is to document the presence and relative position of all marine mammals, vessels and aircraft, contributing to a long-term database on the relative distribution, behavior and seasonal presence of humpback whales off the Kohala Coast.

Oranizations associated with this Project:

Hawaii Marine Mammal Consortium

Theme Keywords associated with Project

marine mammals

threatened/endangered species

Publications associated with this Project:

Gabriele, C.M., S.H. Rickards, S.E. Yin, and A.S. Frankel. 2003. Trends in relative distribution, abundance and population composition of humpback whales, Megaptera novaeangliae, in Kawaihae Bay, Hawaii 1988-2003. Hawaii Marine Mammal Consortium. Final Report for Department of Land and Natural Resources, State of Hawaii and Hawaiian Islands Humpback Whale National Marine Sanctuary. August 2003.

PARK : **KAHO** First Year: 1968 End Year: Status In work

Project Title Spinner Dolphin

Data Type/Location Survey from Honokohau Harbor to Noio Point to Mano Pt. and on some occassions, Kealakekua Bay and Kauhako Bay.

Comments: raychelle created entry 27 June 2005; This record is very relevant to ALKA too. Could be relevant to PUHE and PUHO, but ask Page.

Data Collected photo identification of individuals allowing for estimation of population size, starting in 1979

Proj Purpose Beginning in the spring of 2003, the Kula Nai'a Wild Dolphin Research Foundation is once again conducting research on the dolphin populations found along the Kona coast of the Island of Hawai'i. The research effort is partially funded by a contract from the National Marine Fisheries Service. This project expands on the foundation's long running study of the resident population of Hawaiian spinner dolphins (Stenella longirostris) and will now also study the local spotted (Stenella attenuata) and bottlenose dolphin (Tursiops truncates) populations. These dolphins are also frequently sighted within a few miles of shore. The current research effort is focused on building photo-ID catalogues of uniquely marked individuals and studying the population structure, habitat usage, movement and residency patterns of spinner, spotted and bottlenose dolphins. To facilitate management of these species, the Kula Nai'a Foundation will also collect data on human activities around these protected delphinids

Oranizations associated with this Project:

Kula Naia Wild Dolphin Research Foundation, Inc.

National Marine Fisheries Service

Theme Keywords associated with Project

marine mammals

Publications associated with this Project:

PARK : **KALA** First Year: 1997 End Year: Status In work

Project Title Monk seal monitoring

Data Type/Location

Comments: monitoring in the park.

Data Collected daily observational counts, identification of tagged individuals

Proj Purpose The park, with NMFS, is actively observing, protecting and managing endangered monk seals that haul out in the park.

Oranizations associated with this Project:

US National Park Service

National Marine Fisheries Service

Theme Keywords associated with Project

marine mammals

Publications associated with this Project:

PARK : **KALA** First Year: End Year: Status

Project Title Hawaiian monk seal stranding and sighting network

Data Type/Location as sightings come in from individual callers

Comments: This pertains to all Hawaii parks, including USAR.

Data Collected sighting network, locations of hauled out monk seals

Proj Purpose stranding and sighting locations of Hawaiian monk seals; 1-888-256-9840 is the number to call to report a sighting. There is also a number for sea turtle sightings and strandings:http://www.pifsc.noaa.gov/psd/mtrp/turtle_contact.php

Oranizations associated with this Project:

Monk Seal Research Program, National Marine Fisheries Service, Honolulu Laboratory

Theme Keywords associated with Project

marine mammals

threatened/endangered species

Publications associated with this Project:

Topic Terrestrial Invertebrates

PARK : **HAVO** First Year: 2002 End Year: Status Planned

Project Title Astelia invertebrate monitoring

Data Type/Location Monitoring done at selected plants along transects Olaa Puu unit 4B, 4C, 5B, & 5C. Invert types recorded & collected (if necessary).

Comments: CURRENT MONITORING PLAN

Data Collected Apr 2002-present: Monthly counts of invertebrates found in Astelia rosettes on four transects in Olaa Puu Unit.

Proj Purpose Monitor inverts found in Astelia rosettes due to their role as prey for naiads of Megalagrion koelense.

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

invertebrates

Publications associated with this Project:

Topic Terrestrial Vertebrates

PARK : **AMME** First Year: End Year: Status In work

Project Title Wetland birds

Data Type/Location

Comments: wetland birds monitored in wetland, including Christmas Bird Counts. Emailed DFW for more information and a contact to call (9 June 05). There is likely one transect in the park and constitutes a monitoring location.

Data Collected

Proj Purpose

Oranizations associated with this Project:

Commonwealth of the Northern Mariana Islands Division of Fish and Wildlife

Theme Keywords associated with Project

birds

vertebrates

wetlands

Publications associated with this Project:

PARK : **HALE** First Year: 1980 End Year: Status

Project Title Monitoring of forest birds

Data Type/Location Surveys occur along transects that were set in 1980 in the rainforest areas of Haleakala. The annual surveys focused on "good forest" occuring in upper elevations. Complete transects are surveyed during the state coordinated surveys (which is every 5 years or so) or when there is other biological need. The surveys occur once a year, beginning the 3rd week of April. We try to complete surveying of all transects by the end of May.

Comments:

Data Collected VCP began in 1980. Next survey was in 1992. Annual surveys started in 1996 in selected areas.

Proj Purpose To monitor forest birds in the upper portion of Kipahulu Valley using Variable Circular Plot method

Oranizations associated with this Project:

Theme Keywords associated with Project

birds

variable circular plot

Publications associated with this Project:

PARK : **HALE** First Year: 1966 End Year: Status In work

Project Title Petrel Monitoring

Data Type/Location A number of burrows (Porject burrows) are randomly selected and checked monthly. Others are checked quarterly. (When) Traps are placed outside of burrows to capture individuals who are then banded and released. Banding of adults is the 3rd week of July when adults are incubating eggs. Banding of fledglings is 1st week of October, just before young leaves the colony. To determine which burrows to trap, burrows must indicate signs of activity and be relatively easy to either set traps, or block burrow entrances. We block entrances only in July with hopes of capturing an adult that is waiting at the burrow entrance.

Comments:

Data Collected Burrows are checked for sign of entry and sign if fledgling. Banding data includes: age, sex, area, capture method, blood sample, amount of down, diet sample, weight, skull length, tarsus length, wing length, culmen measurements, and whether it is alive. If a bird is sighted or dead, the location is noted.

Proj Purpose The Hawaiian Dark Rumped Petrel is an endangered seabird whoe primary nesting habitat is now restricted to upper elevations on Haleakala. These are being monitored during the months they are present to ascertain activity and fledgling success.

Oranizations associated with this Project:

Theme Keywords associated with Project

banding
burrow
Dark rumped petrel

Publications associated with this Project:

PARK : **HALE** First Year: 1962 End Year: Status In work

Project Title Nene Monitoring

Data Type/Location Sightings are incidental or occur during annual surveys. These include mortalities. Banding occurs throughout the year. Unbanded nene and young nene are targetted. They are so hard to capture, it's pretty much just "get what we can, when we can."

Comments: Monitoring using current methods began in 1988. Monitoring using other methods began in 1962.

Data Collected Banding: age, weight, skull length, leg length, wing length, number in group, mate, blood sample, fecal sample, and capture method. Sightings: sex, abdominal profile, cloud cover, fog, wind, precipitation, and temperature. Nesting data includes aggression by male and/or female, number of eggs, general location, and nest status (abandoned, chicks, hatching, etc.)

Proj Purpose To monitoring populations of nene through banding, sightings, and nesting locations.

Oranizations associated with this Project:

Theme Keywords associated with Project

Hawaiian goose
nene

Publications associated with this Project:

PARK : HAVO First Year: 1995 End Year: Status In work

Project Title Dark-Rumped Petrel Monitoring Program

Data Type/Location

Comments: CURRENT MONITORING PROGRAM

Data Collected Nest location, colony location,nest success, night time activity,
Monitoring has been done continuously for the 2001-2003 nesting seasons
Initial monitoring was done during the 1994 and 1995 nesing seasons

Proj Purpose Monitoring of known Dark-Rumped Petrel nests on Mauna Loa colonies, nest success, and to see if the cat trapping effort has made a difference in nesting success.

Oranizations associated with this Project:	Theme Keywords associated with Project
US National Park Service	birds

Publications associated with this Project:

USFWS Annual reports

Swift, Roberta 2004, Potential effects of ungulate exclusion fencing on displaying Hawaiian Petrels (Pterodroma sandwichensis) at Hawaii Volcanoes National Park, M.S. Thesis, Oregon State University.

PARK : HAVO First Year: 1993 End Year: Status In work

Project Title Low Density Pig Project-Feral Pig Activity Monitoring

Data Type/Location Transects of varying length in the fenced and unfenced areas in the East Rift Zone. Transects in Ola'a tract Pu`u Unit, New exclosure, unfenced area and adjacent Puu Makaakla NAR. Methods used are those developed by Anderson and Stone 1994.

Comments: CURRENT MONITORING PLAN

Data Collected Feral Pig activity surveys, density estimates conducted quarterly then annually over a ten year period. No data is currently being collected, but could be restarted.

Proj Purpose Part of a project comparing the ecosystem-level effects of low density feral pig populations on the islands of Hawaii and Molokai. Estimate feral pig activity in areas with differing levels of control.

Oranizations associated with this Project:	Theme Keywords associated with Project
US Geological Survey The Nature Conservacny -Hawaii Stanford University	feral ungulates

Publications associated with this Project:

Draft Technical Report,Summary of pig density estimates in Hawaii Volcanoes National Park and adjacent conservation areas (1993-2003). I.Stout, D. Foote

PARK : **HAVO** First Year: 1984 End Year: Status In work

Project Title Alien Species Control: Feral Pigs

Data Type/Location

Comments: CURRENT MONITORING PLAN

Data Collected Data collected include hunting catches, snare catches, location, sex age, body measurements of the pigs captured.
Transects monitored for pig activity sign twice a year once the unit was essentailly free of pigs.
Olaa forest: Koa unit 1989-1998
Puu Unit 1992-1996
Puu Unit D 1996-present
Ag unit 1992-1996
Mauna Loa 1985-1993
Powerline 1984-1989
Kipuka Ki 1984-1989

Proj Purpose The purpose of this project is to erradicate feral pigs from fenced units within Hawaii Volcanoes National Park. The goal is a zero population for feral pigs.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

terrestrial mammals

Publications associated with this Project:

PARK : **HAVO** First Year: 1977 End Year: 1994 Status In work

Project Title Hawaii Forest Bird Surveys

Data Type/Location

Comments: NOT CURRENT MONITORING.

Data Collected

Proj Purpose Forest bird surveys in HAVO ceased in the mid 1990s. This monitoring program provided critical information on bird distribution and densities along moisture and elevational gradients. HAVO is uniquely situated along a moisture gradient (<1000 - > 4000 cm annual rainfall) ranging from wet to mesic to dry forests. Monitoring bird populations along this gradient provides insight into ecological dynamics and population responses not available elsewhere. The park provided the only recent source of forest bird data along an elevational gradient (2000 – 7000 ft.; East Rift Zone to Mauna Loa Strip transects). Additionally, a long term monitoring program is essential to determining population fluctuations and changes, and species' range contractions/expansion

Oranizations associated with this Project:

US National Park Service

BRD, USGS- PIERC

Theme Keywords associated with Project

Publications associated with this Project:

PARK : **HAVO** First Year: 1971 End Year: 1975 Status In work

Project Title Feral Goat Control

Data Type/Location

Comments: Main efforts to control feral goats at HAVO were conducted from 1971-1975. Monitoring for ingress is on-going within the park.
CURRENT MONITORING PLAN

Data Collected Resources Management has catch summaries

Proj Purpose The initial goal of the feral goat control project at Hawaii Volcanoes National Park was to remove all goats within the park boundaries. The initial goal was basically met, and monitoring of ingress to the park continues. Using the "Judest Goat" protocols where an individual goat is radio collared and released, then joins up with an existing herd. These"Judest goats" are monitored every three months, and individuals of the herd are shot, except for the Judest goat. Monitoring is done on Mauna Loa, East Rift of Kilauea, and the Great Crack

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

Publications associated with this Project:

118380, 1982, The Status of
Management of feral goats in Hawaii Volcanoes National Park

PARK : **HAVO** First Year: End Year: Status Planned

Project Title Nene (Hawaiian Goose) Monitoring program

Data Type/Location Paradox, some Access: masterband data, nesting summaries/locations, sightings (seasonal)

Comments: CURRENT MONITORING PLAN

Data Collected banding information, nesting info(location,cluth size, success), predation and predator efforts,

Proj Purpose Population trend monitoring of Nene in Hawaii Volcanoes National Park

Oranizations associated with this Project:

US National Park Service

Division of Forestry and Wildlife, Dept of Land & Natural Resources, State of Hawaii

Slimbridge Wildfowl & Wetlands Trust

Theme Keywords associated with Project

birds

Publications associated with this Project:

Annual reports, Nene recovery plan (USFWS)

PARK : **KAHO** First Year: End Year: Status

Project Title Ducks Unlimited: native waterbird status

Data Type/Location Kaloko Pond? monthly?

Comments: Gail has contact information for Adonia Henry at DU and former researcher Kim Uehara. She will follow up when Adonia returns from vacation.

Data Collected counts of native, alien, and migratory species

Proj Purpose Monitor waterbird populations, nesting success, and fledging success

Oranizations associated with this Project:

Theme Keywords associated with Project

Publications associated with this Project:

PARK : **KAHO** First Year: End Year: Status In work

Project Title Predator control monitoring

Data Type/Location

Comments:

Data Collected Log number of animals trapped, as well as amount of bait supplied to bait stations.

Proj Purpose Monitor results of predator control.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

alien species

terrestrial mammals

Publications associated with this Project:

PARK : **NPSA** First Year: 1991 End Year: Status In work

Project Title Bird Studies - Population Monitoring

Data Type/Location 7 transects on Tutuila (2 in Park). Variable Circular Plot method at various survey stations. Stations are at approx. 150 m intervals. In 1998, 6 transects were established in Manu'a (2 in Park). Olosega, 2 transects are in the propsosed park area.

Comments: As of May 2005, bird monitoring is still being conducted by DMWR.

Data Collected Formerly monthly surveys but currently quarterly surveys on type of birds seen and heard.

Proj Purpose Population monitoring of birds.

Oranizations associated with this Project:

Am Samoa Department of Marine and Wildlife Resources

Theme Keywords associated with Project

birds

Publications associated with this Project:

NBibkey ID 37536. Pierson, Elizabeth, Thomas Elmqvist, and Paul Cox. 1992. The effects of Cyclone Val on areas proposed for inclusion in the National Park of American Samoa.

NBibkey ID 571809. Freifeld, Holly, Chris Solek and Ailao Tualaulelei.

NBibkey ID 552023. Freifeld, H. B. 1999. Habitat relationships of forest birds on Tutuila Island, American Samoa.

NBibkey ID 7731. Department of Marine and Wildlife Resources. 1994. American Samoa Wildlife Investigations Annual Report FY94.

NBibkey ID 590895. Department of Marine and Wildlife Resources. 1995. American Samoa Wildlife Investigations Annual Report FY95.

PARK : **NPSA** First Year: 1986 End Year: Status In work

Project Title Bat Studies - Population Monitoring

Data Type/Location Monthly counts are conducted at station sites. Quarterly counts are conducted at roosts to determine colony size , either by boat circumnavigating the island or through counts of bats emerging from roosts (exit counts).

Comments: As of May 2005, bat monitoring is still being conducted by DMWR.

Data Collected Monthly point counts of Pteropus samoensis at 7 sites on Tutuila, one of which is within the Park at Amalau Valley. Pteropus tonganus counts are conducted at roosts.

Proj Purpose To generate indices of abundance used both to track temporal changes.

Oranizations associated with this Project:

Am Samoa Department of Marine and Wildlife Resources

Theme Keywords associated with Project

bats

Publications associated with this Project:

NBibkey ID 571834. Brooke, Anne. 2001. Population status and behaviors of the Samoan flying fox (Pteropus samoensis) on Tutuila Island, American Samoa.

NBibkey ID 88791. Brooke, Anne. An overview of Pteropus tonganus population size and habitat use in American Samoa, with discussion of bats occuring within the National Park of American Samoa.

NBibkey ID 7731. Department of Marine and Wildlife Resources. 1994. American Samoa Wildlife Investigations Annual Report FY94.

NBibkey ID 590895. Department of Marine and Wildlife Resources. 1995. American Samoa Wildlife Investigations Annual Report FY95.

NBibkey ID 590997. Brooke, A. P. Fruit bat studies Pteropus samoensis and Pteropus tonganus 1995-1996.

NBibkey ID 585044. Utzurrum, Ruth. 2003. Count methods and population trends in Pacific Island flying foxes.

NBibkey ID 86529. Engbring, John. 1989. Observations of fruit bats in Samoa, with emphasis on the status of the Samoan fruit bat (Pteropus samoensis).

NBibkey ID 118564. Wilson, Don and John Engbring. 1993. Status of the fruit bat, Pteropus samoensis, in Samoa.

NBibkey ID 585473. Utzurrum, R. C. B. 1997. American Samoa wildlife investigations: Fruit bat studies.

NBibkey ID 38315. Pierson, E. D, T. Elmqvist, W. E. Rainey, and P. A. Cox. 1996. Effects of tropical cyclonic storms on flying fox populations on the South Pacific islands of Samoa.

Topic Threatened and Endangered Species

PARK : **HAVO** First Year: 1989 End Year: Status In work

Project Title Hawksbill turtle monitoring program

Data Type/Location data on Excel spreadsheets, located in turtle office, at Resources Management office, Hawaii Volcanoes National Park

Comments: CURRENT MONITORING PLAN

Data Collected Daily & nightly nesting activity during the nesting season (end-May to early to late December)
Predator information

Proj Purpose Documentation of nesting activity of the endangered Hawksbill turtle at HAVO beaches, and nesting beaches located outside of the National Park (Kamehame,Punaluu, Kawa, Ninole. Pohue, Horseshoe, and Kaloa). Hawksbill turtles (federally listed as endangered) frequently nest on beaches within the park. Turtle nesting has been observed at three beaches: Halape, Keauhou Landing, and Apua, with Apua having the longest history of documented nesting. The park has only recently started observing nesting at Halape and Keauhou, so data at these beaches is limited. Data for other beaches does not exist.

Oranizations associated with this Project:

US National Park Service

NOAA, National Marine Fisheries Service

Theme Keywords associated with Project

reptile

Publications associated with this Project:

PARK : **KAHO** First Year: 1999 End Year: Status In work

Project Title Green sea turtle population study

Data Type/Location subcutaneous flipper tag detected by sensor when turtles are captured; some visible tags cemented on shell captured turtles are weighed, carapace length measured, sometimes the stomach is pumped for contents, tumor inspection

Comments: Project also related to ALKA, PUHO, PUHE, HAVO, HALE, KALA

Data Collected Growth, health, etc.

Proj Purpose Monitor health and numbers of green sea turtle population at KAHO.

Oranizations associated with this Project:

NOAA, National Marine Fisheries Service

US National Park Service

Theme Keywords associated with Project

coral reef

nearshore

reptile

threatened/endangered species

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status In work

Project Title Turtle Program

Data Type/Location

Comments: These likely occur at Ritidian and Cocos; however, Dwayne agreed that since sea turtles use the park resources, this record does pertain to the park.

Data Collected The number of nests found for both Chelonia mydas and Eretmochelys imbricata between FY75-00 (with not all years surveyed).
Aeirial surveyes.

Proj Purpose Division of Aquatic and Wildlife Resources (DAWR) Sea Turtle Recovery Program (STRP) is funded in part by the NMFS Honolulu, PIAO to determine the extent of Guam s resident/nesting sea turtle populations and nesting habitats by conducting beach surveys and satellite tracking. ComNavMarianas has funded part of the satellite telemetry portion of the project through the purchase of satellite tags and satellite time. The objectives of the project are:
To collect baseline population size-structure (age and size) and genetic information for sea turtles in and about Guam.
To survey Guam s beaches for sea turtle nesting activity for both green turtle (Chelonia mydas) and hawksbill (Eretmochelys imbricata) throughout the nesting period in order to determine the size of the nesting population of sea turtles on Guam and to employ a variety of tagging techniques to determine movement, residency and further define population dynamics.
To establish a Guam based sea turtle-working group consisting of natural resource stakeholders and involve them in the refinement of the implementation plan.

Oranizations associated with this Project:

Guam Division of Aquatic and Wildlife Resources

Theme Keywords associated with Project

reptile

threatened/endangered species

Publications associated with this Project:

Topic Vegetation

PARK : **HALE** First Year: 1973 End Year: Status In work

Project Title Bog Data

Data Type/Location Greensword Bog: Five 10 m transects established in central, severely disturbed portion of Greensword Bog. Transect end points marked with a 518-inch PVC pipe. At each sampling event, a metric tape was stretched between marked ends of each transect. A total of 20 one-meter-square plots were sampled, 10 plots on each side of the 10 m long transect. This procedure allowed resampling of virtually identical 1 m^2 plots in subsequent years. Within each plot, cover was visually estimated to nearest 5% for each vascular plant species, with cover less than 2.5% recorded as 1%. Two workers made estimates independently, then reached consensus on values to record. In practice, the technique worked reasonably well and appeared repeatable in this unlayered type of vegetation. To supplement this information, photographs (35mm slides) were taken of plot #5 of each transect, as well as of the overall transect from each end. Sampling was initially carried out six weeks after the fencing and repeated annually from 1981 through 1987 (seven times). All data and photographs are on file at the Research Office, Haleakala National Park.
Big Bog and Mid-Camp Bog: Three primary vegetation types were identified, based on dominance of three native sedge species - Oreobolus furcatus, Carex echinata, and Carex alligata. Stands of the tall (to 1.5 m) native sedge Carex alligata were not sampled since these stands are virtually monospecific, lack diversity, and are not subject to damage by pigs. At project start in 1982, eleven 100 m^2 (10 m x 10 m) quadrats and two 10 m transects were established in sites chosen as representative of the other two communities (7 quadrats in Carex echinata; 4 quadrats and 2 transects in Oreobolus). All four corners of each quadrat were marked with PVC pipes; two corners were wired with stamped metal identification tags. Twenty 1 m^2 plots were placed within each 100 m^2 quadrat, with ten plots along each of opposite sides; the 100 m^2 quadrats were also divided into four 25 m^2 subquadrats. For each species, presence/absence and an estimate of cover to the nearest 5% were recorded in the plots and subquadrat3. The twenty 1 m2 plots were sampled using a meter-square PVC plot frame placed along a meter tape stretched between PVC poles, allowing accurate relocation of plots. To maximize continuity, one observer (the senior author) was present during each of the four sampling events over the six-year period. Observers estimated cover independently, then agreed on the final figure. The cover of uncommon species was estimated first, that of dominant species last. To increase standardization of estimates, methods were carefully reviewed prior to each sampling. Species with less than 2.5% or 2.5 dm^2 cover were recorded as "present" (1% for calculations), cited as "negligible" in text. Two sites (12 and 13), consisting of small areas of exceptionally intact Oreobolus turf, were sampled by a transect of ten 1 m^2 plots.

Comments: Field biologists B.H. Gagne, J.D. Jacobi, R.J. Nagata, and A.Y. Yoshinaga recorded observations of feral pig disturbance of native veg in HALE's bogs from 1974-1980. Bogs were fenced in 1979, 81, 83, and 87.

Data Collected Greensword Bog: vegetation cover- repeated annually from 1981-1987. Big Bog and Mid-Camp Bog: presence/absence and percent cover. The sites were sampled four times at roughly two year intervals, in September 1982, October 1984, December 1986, and October 1988. Two sites in Big Bog (10 and 11) were enclosed by fencing in April 1987; the remainder of the sites, in Mid-Camp Bog, were enclosed by fencing in August 1988, two months prior to final sampling. Photographs of quadrats, transects, and plots were taken to supplement quantitative data.

Proj Purpose Monitoring occurred in 1973 and 1977. Some bogs were fenced and monitoring occurred annually 1981-1984. Veg communities in bogs were monitored for change in 1982, 84, 86, 88, and in 2001.

Oranizations associated with this Project:

Theme Keywords associated with Project

- amphibian
- biological
- terrestrial mammals
- vascular plants

Publications associated with this Project:

Loope, Lloyd L. Aspects of the history and biology of the montane bogs. 1991 Aug. Studies in montane bogs of Haleakala National Park. Honolulu, HI: Cooperative National Park Resources Studies Unit, University of Hawaii at Manoa; Technical report 76-78. http://www.botany.hawaii.edu/faculty/duffy/techrep.htm.

Medeiros, Arthur C. 1991. Degradation of vegetation in two montane bogs: 1982-1988. Studies in montane bogs of Haleakala National Park. Honolulu, HI: Cooperative National Park Resources Studies Unit, Univ. of Hawaii at Mânoa; Technical report 76-78.

Yoshinaga, Alvin Y. 1977. Montane rain forest vegetation of northeast Haleakala, Maui, Hawaii. M.S. thesis, Dept. of Botany, University of Wisconsin, Madison.

Loope, Lloyd L. Recovery of vegetation of a montane bog following protection from feral pig rooting. 1991 Aug. Studies in montane bogs of Haleakala National Park. Honolulu, HI: Cooperative National Park Resources Studies Unit, University of Hawaii at Manoa; Technical report 76- 78.

PARK : **HALE** First Year: 1934 End Year: Status In work

Project Title Silversword Monitoring Survey

Data Type/Location The plots were established in 1982. The annual flowering counts have been done since 1969. The entire population has been censused since 1934, and has been censused regularly since 1970. The plots and flowering counts are done annually in Oct. They were last done last year (2004). The entire population census is done every ten years. They were last done in 2001. We have maps for all the plots and known silversword populations.

Comments: Received email from Forest Starr and Kim 6/2005 with the above information

Data Collected PLOTS - Location of sword, size class, live or dead, flower or not.
FLOWERING - Flowering count craterwide.
FULL CENSUS - Location of populations. # of individuals in different size classes.

Proj Purpose To monitor populations of silversword

Oranizations associated with this Project:

Theme Keywords associated with Project

silversword

Publications associated with this Project:

Kobayashi, Herbert K. 1993. Census report on the Haleakala silversword Argyroxiphium sandwicense dc. (Compositae) ssp. macrocephalum (Gray) Meyrat for 1980 and 1991. Makawao, HI: Hawaii Natural History Association and Haleakala National Park.

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Author unknown. 1985. Decline of silversword population during 1985, Author unknown. Haleakalâ National Park, Makawao, HI.

Badaracco, Robert. 1962. Report of silversword census and status -- Oct. 1962, Robert Badaracco. Haleakalâ National Park, Makawao, HI.

Gagné, Betsy H. 1982. Silversword alliance in the bogs of East Maui: a continuing report [abstract]. Proceedings of the 4th Conference in
Natural Sciences, Hawaii Volcanoes National Park, ed. Clifford W. Smith, 62Honolulu, HI: Cooperative National Park Resources Studies Unit,
University of Hawai'i at Mânoa.

Haleakalâ National Park. 1972. [Flowered silversword plants, 1972]. Makawao, HI: Haleakalâ National Park.

Haleakalâ National Park. 1973. [Flowered silversword plants, 1973].
Makawao, HI: Haleakalâ National Park.

Haleakalâ National Park. 1974. [Flowered silversword plants, 1974].
Makawao, HI: Haleakalâ National Park.

Haleakalâ National Park. 1975. [Flowered silversword plants, 1975].
Makawao, HI: Haleakalâ National Park.

Haleakalâ National Park. 1976. [Flowered silversword plants, 1976].
Makawao, HI: Haleakalâ National Park.

Kobayashi, Herbert K. 1973. Present status of the ahinahina or silversword Argyroxiphium sandwicense DC. on [?] Haleakala, Maui. Newsletter of the Hawaiian Botanical Society 12, no. 4: 23-25.

Kobayashi, Herbert K. 1979. Technical report: status of the Haleakala silversword, Argyroxiphium sandwicense, at Ka Moa o Pele Cinder Cone and Kalahaku Overlook, Haleakala National Park, Herbert K. Kobayashi. Haleakalâ National Park, Makawao, HI.

Kobayashi, Herbert K. 1991. Technical report: status of the Haleakala silversword, Argyroxiphium sandwicense DC. ssp. macrocephalum (Gray) Meyrat at Ka Moa o Pele Cinder Cone and Kalahaku Overlook, Haleakala National Park, Maui, Hawaii, December 1991, Herbert K. Kobayashi. Haleakalâ National Park, Makawao, HI.

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Lamb, Samuel H.1936. Final progress report. 1935 silversword project, Samuel H. Lamb.

Loope, Lloyd L., Crivellone, Carmelle F. 1986. Status of the silversword in Haleakala National Park: past and present, Lloyd L. Loope, and Carmelle F. Crivellone. Technical report 58. Cooperative National Park Resources Studies Unit, University of Hawai'i at Mânoa,
Honolulu, HI.

Loope, Lloyd L., and Arthur C. Medeiros. 1994. "Haleakalâ silversword (Argyroxiphium sandwicense DC. spp. macrocephalum)." Status and trends report, National Biological Survey.

Loope, Lloyd L., and Arthur C. Medeiros. 1995. Haleakala silversword. Our living resources: a report to the nation on the distribution,
abundancy, and health of U.S. plants, animals, and ecosystems. editor Edward T. LaRoe, 363-64. Washington, DC: U.S. Dept. of the Interior,
National Biological Survey.

Peterson, Dana. 1978. Report -- 1978 silversword census, Dana Peterson. Haleakalâ National Park, Makawao, HI.

Powers, Howard A. 1938. Progress report on investigation of silversword in Haleakala Section, Hawaii National Park, Howard A. Powers. Hawai'i National Park, Haleakalâ Section, Makawao, HI.

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Population studies of Haleakala silversword, M. S. Witter, and P. W. Rundel.

PARK : HAVO First Year: 2004 End Year: Status Planned

Project Title LUHI FIRE REHAB

Data Type/Location

Comments: Monitoring may occur in 5 years and at 10 year intervals following that.
CURRENT MONITORING PLAN

Data Collected

Proj Purpose Monitoring long term recovery after fire in and outside fenced area of East Rift SEA, without presence of alien species including ungulates and alien plant species.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects

restoration

vascular plants

Publications associated with this Project:

HAVO Project Review # 2003-041, Luhi Fire burned area rehab funding request, Tim Tunison, 2003

PARK : HAVO First Year: 2003 End Year: Status Planned

Project Title Koa recovery inside and outside experimental ungulate proof fence exclosures in Kahuku

Data Type/Location 3 paired 35x 35 m treatment plots located in 3 kipuka in Kahuku-one plot fenced (ungulates excluded , one unfenced

Comments: Completion of Phase one report due May 18, 2005, Rhonda Loh will forward a copy.
CURRENT MONITORING PLAN

Data Collected Species richness(at 0, 2 yr)
cover along three,30m long transects(at 0, 2 yr)
stem density of Koa,koa size classes, (0,6,12,18,24 mo.)
survivorship/ damage of a tagged subset of koaseedlings(6,12,18,24mo.)
Initial Baseline monitoring to be completed.

Proj Purpose Evaluate natural recovery of Acacia Koa by root sprouting and/ or seedlings in previously logged forests in kahuku Ranch.
Measure the response of alien and native plants to release from ungulate pressure. Monitoring objective : to monitor recovery around logged versus live trees, monitor exclosure effects on Koa recovery, and monitor long term recovery of Koa outside of
exclosure

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

feral ungulates
vascular plants
weed distribution

Publications associated with this Project:

HAVO Project Review# 2003-047, Experimental Ungulate Exclosure Fences(Kahuku -west), Loh, 2003

Phase 1: Completion Report due May 18, 2005, Rhonda will forward a copy

PARK : HAVO First Year: 2003 End Year: 2008 Status In work

Project Title Panau Iki Burn Revegetation project (565 ac)

Data Type/Location Plant establishemt efforts are to be concentrated in ~450 circular plots (15 m radius) established along transects that span the area.

Comments: Monitoring may continue at 10 year intervals for 10-30 years. CURRENT MONITORING PLAN.
Methodologies avery similar to those being used in KUPUKUPU burn area revegetation project, with exception of use of fire-sensitive species

Data Collected Monitoring of recovery in order to asess the success of the revegetation effort will take place at 20-50 vegetation plots inside and outside planting nodes. Outplant success, seedling recruitement of 4 fire tolerant sp. From direct seeding and overall vegetation recovery will be evaluated at 1,2, and 5 years following the burn.

Proj Purpose Monitor Efficacy of Restoration Efforts in Fire-damaged Area
Re-vegetate with native plants a 540 acre `ohi`a woodland/native shrubland damaged by a fire that began February 2003. Prevent establishment of aggressive non-native woody species.Approxcimately 10000 plants composed of >15 native species will be established by direct seeding and outplanting into ~450 plots along transects spanning the area. Control of Faya Tree, Strawberry Guava, and other aggressive non-native woody species by mechanical or chemical treatment will be used to prevent them from invading and dominating the post-burn environment.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects
restoration
vascular plants
weed control

Publications associated with this Project:

HAVO Project Review# 2003-029 Rehab 655 ac section of Panau Iki brun, R. loh, 2003

PARK : HAVO First Year: 2003 End Year: Status In work

Project Title Silversword direct seeding

Data Type/Location Mauna Loa upper unit near 7000 ft exclosure. 10 sites: direct seeding in small plots (1/2 in rock , 1/2 in adjacent shrub patches)

Comments: CURRENT MONITORING PLAN

Data Collected to be collected at 1 yr intervals

Proj Purpose Monitor seedling recruitement from direct seeding of silverswords

Oranizations associated with this Project:

US National Park Service

US Geological Survey

Theme Keywords associated with Project

rare etc.

restoration

vascular plants

Publications associated with this Project:

HAVO Project Review# 2003-035 Complete Reintroduction of Endangered Silversword, Tim Tunison , 2003

PARK : HAVO First Year: 2003 End Year: Status In work

Project Title Vegetation Recovery in the May 2002 Kupukupu Burn

Data Type/Location ~13000 fire tolerant plants direct seeded/outplanted in 250-300 plots (15m radius) . Fire sensitive spp.seeded/ planted in 3 sets of 3 plots(radii: 5m, 15m, 25m) to create stands less penetrable to fire. Annual removal of invasive woody sp.

Comments: Monitoring may occur at 10 year intervals for 10-30 years following the 5th year monitoring
SENSITIVE DATASET: PARK ONLY; Entered from proposed action statement provided by sierra mac daniels.
CURRENT MONITORING PLAN

Data Collected Outplant success, seedling recruitment from direct seeding and vegetation recovery will be evaluated at 20-50(HOW MANY?) vegetation plots inside and outside planting nodes at 1,2,5 years following the burn

Proj Purpose Monitor Efficacy of Restoration Efforts in Fire-damaged Area
1) establish fire-tolerant and fire-sensitive native plant associations in a 455 acre recently burned area that was formerly `ohi`a/swordfern.
2)develop methodoligies for establishing dense stands of fire-sensitive native species
3) control aggressive non-native woody species to prevent them from invading and dominating the post-fire environment

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects

restoration

vascular plants

Publications associated with this Project:

HAVO Project Review#2002-030 Post-Fire revegetation, R. Loh , 2002

Unofficial Pub,Rehabilitate 455 ac of fire-damaged transitional mesic 'ohi'a/swordfern forest, 10/01/02- HAVO research center, nursery files

PARK : HAVO First Year: 2002 End Year: Status In work

Project Title `Ohi`a lowland community restoration project-Outplant success

Data Type/Location Hilina Pali rd.: one ohia dieback site(131 ac), one grass site(w/ 3 dif. Treatments)(100 ac). 12-16 native spp planted at high, med., low or 0 densities at nodes along transects . Initial outplant goals>7500 plants, have increased significantly

Comments: monitoring may contiunue for 10-30 years at 10 year intervals after monitoring at 1 & 5 years.
CURRENT MONITORING PLAN

Data Collected Survivorship and vigor of individual outplanted plants monitored at 1 year.

Proj Purpose Restore `ohi`a lowland communities to conditions as natural as practicable . Full restoration is not expected, instead, the intent is to create modified native communities that are able to self-perpetuate, accepting that alien grasses remain important ecosystem componenets.
Monitor efficacy of different restoration techniques
Key Questions:
How does seedling recruitment differ between recipient vegetation microsites?
To what extent do grass removal techniques influence outplanting success and seedling recruitment?
What combination of outplanting and seed reintroduction will effectively meet management goals?

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

restoration
vascular plants
weed control

Publications associated with this Project:

HAVO Project Review # 2002-033 Refine techniques for revegetating dry ohia woodlands, R. loh 2002
HAVO Project Review# 2002-013, Rehab Ohia dry lowland forest, R. Loh, 2002

PARK : HAVO First Year: 2002 End Year: Status In work

Project Title Rare plant monitoring at Olaa Tract

Data Type/Location Survey of rare plants by initiative control (walking systematically- no permanent transects). Ongoing monitoring of outplanting.

Comments: CURRENT MONITORING PLAN

Data Collected Presence

Proj Purpose To monitor rare plants at Olaa Tract

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

rare etc.
restoration
vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 2002 End Year: 2007 Status In work

Project Title Rehabilitation of Koa and Koa-`a`e forest on lower Mauna Loa-artificial seedbank

Data Type/Location Plots at spur road, fenceline on Mauna Loa Strip road. Comparing "all at once" and "trickle" methods of establishing an artificial seed bank. In "trickle "treatment seed broadcast is spread out over a 2 year period.

Comments: CURRENT MONITORING PLAN

Data Collected reading seedling recruitment at all experimental sites at 6 mo intervals to 2 years from establishment, then will continue reading a subset at 6 mo. Intervals to 5 yr. point and willread the rest at 5 yrs.
Most plots established june 2002

Proj Purpose Monitor restoration efficacy, test new restoration methods. Researchers are attempting 2 methods for creating an "artificial seed back at selected sites targeted for restoration.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

restoration

vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 2002 End Year: 2007 Status In work

Project Title Rehabilitation of Koa and Koa-`a`e forest on lower Mauna Loa-outplanting

Data Type/Location 3 sites on Mauna loa (Soapberry bend(5 subsites), Fence line, Spur road) where grasses have been herbicided and outplanting has been initiated(outplanting initiated beginning in 1988-jan 2004). 1-4 treatment and control 20 x30 m FMH Plots in each site

Comments: See also seeding project. CURRENT MONITORING PLAN.

Data Collected 5 year FMH Plots: Cover, Frequency(species list), Tree density by height class for all sp, shrub density
Baseline plots established in March 2002, will be reread in 2007

Proj Purpose Restore koa montane dry forest, koa montane mesic forest, koa/`ohi`a/`a`e montane mesic forest
Monitor efficacy of restoration efforts- herbiciding of grasses and outplanting

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

restoration

vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 2001 End Year: Status In work

Project Title `Ohi`a lowland community restoration project-FMH plots

Data Type/Location 25 FMH (Fire monitoring handbook) plots established in OHIA DIEBACK and GRASS removal areas off of Hilina Pali Rd where Seed Broadcast and Outplanting experiments are being conducted.

Comments: permanent plots established for long term monitoring (10-30 years of monitoring), possibly at 10 year intervals, plots were read when they were put in but not read a second time yet (05/05/05)

Data Collected Baseline vegetation community information(Cover, frequency, density etc.) collected prior to the beginning of restoration activities, 2001

Proj Purpose Quantify long-term impacts of restoration activities (outplanting and seed broadcast)

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

vascular plants

Publications associated with this Project:

HAVO Project Review # 2002-033 Refine techniques for revegetating dry ohia woodlands, R. loh 2002

HAVO Project Review# 2002-013, Rehab Ohia dry lowland forest, R. Loh, 2002

PARK : HAVO First Year: 2001 End Year: Status In work

Project Title `Ohi`a lowland community restoration project-Seed Broadcast Success

Data Type/Location Hilina Pali:178 OHIA DIEBACK(131 ac)subplots treats: Herb.& Grass, No Herb. & Grass, Cinder, Native Shrub; 72 GRASS (100 ac)subplots treats: herbicide, mechanical, no control, rototilled
Each is seeded 2.5 m radius with low,med,or high seed conc.

Comments: Monitoring may continue for 10-30 years at 10 year intervals.
CURRENT MONITORING PLAN

Data Collected Seedling recruitment by height class in each of the control treatments and seeding treatments
Monitoring growth and surviriship of up to 5 tagged individuals of 6 different species in each sub-plot.

Seed recruitment to be monitored at 3 mo., 6 mo. , 1 yr, 2 yr, 5yr following seed broadcast
Tagged individuals to be monitored at 6 mo, 1 yr, 1.5 yr, 2yr following seed broaddcast

Proj Purpose Monitor efficacy of different restoration techniques

Restore `ohi`a lowland communities to conditions as natural as practicable .The intent is to create modified native communities that are able to self-perpetuate, accepting that alien grasses remain important ecosystem components.

Key Questions:
How does seedling recruitment differ between recipient vegetation microsites?
To what extent do grass removal techniques influence outplanting success and seedling recruitment?
What combination of outplanting and seed reintroduction will effectively meet management goals?

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

restoration
vascular plants
weed control

Publications associated with this Project:

HAVO Project Review # 2002-033 Refine techniques for revegetating dry ohia woodlands, R. loh 2002
HAVO Project Review# 2002-013, Rehab Ohia dry lowland forest, R. Loh, 2002

PARK : HAVO First Year: 2001 End Year: Status Complete

Project Title Alien Plant Mapping in Hawaii Volcanoes National Park

Data Type/Location Initial foot surveys(Jan 01-Apr 02) along roads trails, fencelines; generation distribution and range maps for ~40 sp.; Perimeter searches for small populations; foot searches, transect work and helicopter searches for broad distributions

Comments: no permenant plots, survey data is compared to older reports of weed surveys done in HAVO by Tim Tunison.
CURRENT MONITORING PLAN

Data Collected Invasive species along roads, trails and fencelines; species name, position approximate location.Initial Surveys did not indicate data on population size/density(Jan 2001-April 2002) Later surveys relied on Maps generated from initial survey data, historical distributions, alien plant control loacations. Small or localized populations were visited and mapped. Broader distributions were mapped via foot searches, transect work, helicopter searches.

Proj Purpose Map locations of alien plants in HAVO. Evaluate weed management in SEA units

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

vascular plants
weed distribution

Publications associated with this Project:

Unofficial Pub, Alien Plant Mapping in Hawaii Volcanoes National Park, 2001-2003; HAVO RM-VEG office, computer of D. Benitez

PARK : HAVO First Year: 2001 End Year: Status

Project Title Broomsedge burn-FMH (Fire Mangement Handbook) Plots

Data Type/Location 30 FMH plots- 10 in 1x burned (broomsedge fire), 10 in 2x burned (broomsedge & Namakani fires), 10 in unburned area.

Comments: Monitoring may occur for 10-30 years at 10 year intervals.
CURRENT MONITORING PLAN

Data Collected Cover, Shrub density, Tree stand structure, Frequency (sp list) are read for each plot at 1 yr, 3yr. From the end of the burn. May reread at a later date if funding becomes available,or the area burns again

Proj Purpose Monitoring to compare vegetation in an unburned area, and areas burned 1x and 2x by wildfire. Restoration efforts ongoing in the two burned areas. Documenting the effects of restoration efforts and possible differences in recovery due to # of times burned. Establish monitoring plots in case of future fires in the area

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects
restoration
vascular plants

Publications associated with this Project:

Unpublished,A proposal to rehabilitate the Broomsedge Fire, HAVO, R Loh & T. Tunison , 2000-RM Nursery Files

Unpublished, Rehabilitation efforts in the Broomsedge Fire:Progress Report 10/1/01, R.Loh- HAVO RM Nursery Files

PARK : HAVO First Year: 2001 End Year: 2006 Status In work

Project Title Rare Plant stabalization in Kipuka Puaulu, Kipuka Ki, Mauna Loa SEA

Data Type/Location Outplanting sites in Kipuka Puaulu, Kipuka Ki, and two sites near 6000 ft elevation near the Mauna Loa Strip Road

Comments: This project entered from a list of monitoring projects from Linda Pratt. CURRENT MONITORING PLAN.

Data Collected height, growth mortality of native plants to be measured at yearly intervals following outplanting

Proj Purpose Determine success of outplanting as restoration tool for rare plants in mesic forest, and in upper elevation and subalpine forest

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

restoration
vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 2000 End Year: Status Complete

Project Title Broomsedge Burn-Outplant & Seed Broadcast success

Data Type/Location 60 15m radius seedrecruitment plots: 30 seeded & 30 not seedes

Comments: Monitoring may continue for 10-30 years at 10 year intervals or after next fire.
CURRENT MONITORING PLAN

Data Collected None being collected currently. Seedling recruitment, outplant survivorship. Monitoring of up to 5 tagged individuals in each size class for each speceis in each plot

Proj Purpose Monitoring to assess vegetation recovery in areas burned 1x and 2x by wildfire. Restoration efforts ongoing in the two burned areas. Documenting the effects of restoration efforts and possible differences in recovery due to # of times burned.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects

restoration

vascular plants

Publications associated with this Project:

Unpublished,A proposal to rehabilitate the Broomsedge Fire, HAVO, R Loh & T. Tunison , 2000-RM Nursery Files

Unpublished, Rehabilitation efforts in the Broomsedge Fire:Progress Report 10/1/01, R.Loh- HAVO RM Nursery Files

PARK : HAVO First Year: 2000 End Year: Status In work

Project Title Complete reintroduction of endangered Silversword

Data Type/Location Mauna Loa Strip Road , In and near exclosures at 7000 and 6800 ft elevation, Kipuka Kulalio, Kipuka Maunaiu, Mauna Loa Trail-above trailhead & below ungulate fence

Comments: Unable to interview Ane/Tim before holiday, Also see earlier Silversword Projects (starting 1998?).
CURRENT MONITORING PLAN

Data Collected Height, rosette diameter,vigor, mortality, phenology monitored at 6 month intervals for the first year, and yearly intervals after that
Natural seedling recruitemnt also monitored.
Future years will monitor phenology for all plants in the reintroduced population and track subsequent seedling establishment

Proj Purpose Measure growth and determine mortality of a 10% subset of 125,000 out-planted silverswords on Mauna Loa

Oranizations associated with this Project:

US National Park Service

Hawaiian Silversword Foundation

Volcano Rare Plant Facility

University of Hawaii - Manoa

Theme Keywords associated with Project

rare etc.

restoration

vascular plants

Publications associated with this Project:

HAVO Project Review# 2003-035 Complete Reintroduction of Endangered Silversword, Tim Tunison , 2003

HAVO Project Review#2002-06, Outplant Silverswords, Tim Tunison 2002

PARK : HAVO First Year: 2000 End Year: 2005 Status

Project Title Naulu Lama Forest Project

Data Type/Location

Comments: monitoring of outplanted rare and uncommon species may be monitored after 2005.
CURRENT MONITORING PLAN

Data Collected Measured rare tree and plants (dbh), heights , phenology, and mortality

Proj Purpose Outplanting of rare and uncommon species in Naulu forest

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

Publications associated with this Project:

PARK : HAVO First Year: 1997 End Year: 2003 Status Complete

Project Title Low Density Pig Project-vegetation

Data Type/Location `Ola`a tract: Pu`u Unit, 'new exclosure" and unfenced area; Pu`u Maka`ala NAR. 6 paired 20 x20 m vegetation plots near exclosure boundaries (each plot in exclosure paired with one nearby not protected from pigs)

Comments: Similar study completed in Kamakou Preserve, Molokai. NOT CURRENT MONITORING PLAN.

Data Collected ground cover, pig -sensitive(prefered forage) species counted and measures, alien plant frequency determined and cover-abundance estimated with Braun-Blanquet scale
Established 1997, remonitored in 2003

Proj Purpose Determine effects on vegetation of low density feral pig populations

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

feral ungulates

nonvascular plants

vascular plants

weed distribution

Publications associated with this Project:

PARK : HAVO First Year: 1997 End Year: 2002 Status Complete

Project Title Silene hawaiiensis monitoring, Mauna Loa

Data Type/Location One population at 3 trees kipuka, one in a concertina (razor wire) fence area below 3 trees kipuka

Comments: This is not a current monitoring project, but LWP expressed revisiting these plots and restarting monitoring.
NOT CURRENT MONITORING PLAN.

Data Collected None curently being collected. Was collected at 2 to 6 mo. intervals

Proj Purpose Monitoring of populations of Threatened Silene hawaiiensis on Mauna Loa with and without Feral ungulate control

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

feral ungulates

rare etc.

vascular plants

Publications associated with this Project:

Thomas Belfield and Linda Pratt. Rare Plants of the Mauna Loa Special Ecological Area, Hawaii Volcanoes National Park. PCSU Technical Report #130

PARK : HAVO First Year: 1995 End Year: Status In work

Project Title Rare plant monitoring at Kipuka Puaulu SEA

Data Type/Location Surveys using initiative control to find new individuals. Associated outplanting monitoring is ongoing. This is done on a grid, instead of transects. Plants are located by grid coordinates.

Comments: Linda Pratt has a large database with this information. CURRENT MONITORING PLAN

Data Collected Presence

Proj Purpose To monitor existing rare plant populations with a focus on Hibiscadelphus.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

rare etc.

vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 1993 End Year: 2000 Status Complete

Project Title Rare plants of the Lowlands

Data Type/Location Fimbrystylis plots at Kaena Point, Pu'u Loa; Sesbania tomentosa plants tagged and measured at seven population nodes and a subsample was monitored

Comments: Monitoring was done once per year. NOT CURRENT MONITORING PLAN.

Data Collected none currently being collected. Subsample of Sesbania tomentosa tagged and measured to determine mortality, monitoring of the rare sedge Fimbristylis hawaiiensis in 2.5 m plots at two sites

Proj Purpose Survey area sknown to harbor rare plants in the coastal lowlands, and mid-elevation woodlands; monitor a subsample of Sesbania tomentosa to determine mortality, Monitor Fimbristylis hawaiiensis

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

rare etc.

vascular plants

Publications associated with this Project:

PARK : HAVO First Year: 1992 End Year: 2000 Status Complete

Project Title Mauna Loa Rare Plants

Data Type/Location six systematic transects crossing the Mauna Loa Strip from the Powerline to the top of the Strip Road; the sections of Kipuka kulalio and Kipuka Maunaiu above 7000 ft fence were monitored with transects 100m apart.

Comments: This is not a current monitoring project, but could be revived.

Data Collected Height, Width , condition and mortality of tagged individual plants was monitored in several populations

Proj Purpose Inventory of mauna Loa Rare plants above 7000 ft fence, systematic monitoring on two populations of the endangered Plantago hawaiiensis and two populations of the threatened Silene hawaiiensis

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

rare etc.

vascular plants

Publications associated with this Project:

557901,Belfield&Pratt,2002

PARK : HAVO First Year: 1992 End Year: 2000 Status In work

Project Title Rare plant monitoring at Mauna Loa SEA

Data Type/Location Plant surveyed by initiative control- taking note of those seen while walking through area.

Comments: NOT CURRENT MONITORING PLAN

Data Collected Presence. Ongoing monitoring of outplantings (live/dead).

Proj Purpose To monitor rare plants at Mauna Loa SEA

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

rare etc.

vascular plants

Publications associated with this Project:

Thomas Belfield and Linda Pratt. Rare Plants of the Mauna Loa Special Ecological Area, Hawaii Volcanoes National Park. PCSU Technical Report #130. October 2002.

PARK : HAVO First Year: 1991 End Year: 1998 Status

Project Title SEA monitoring project: Response of native plant communities to removal of feral ungulates at Hawaii Volcanoes National Park.

Data Type/Location Olaa-Koa rainforest unit SEA,Olaa PUU unit, Olaa D unit adjacent to New Unit outside of fence,East Rift SEA

Comments: NOT CURRENT MONITORING PLAN

Data Collected

Proj Purpose To monitor response of native plant communities to management efforts of removal of feral ungulates at Hawaii Volcanoes National Park

Oranizations associated with this Project:

Theme Keywords associated with Project

Publications associated with this Project:

132379, 1999, Pratt, Abbott, Palumbo: Vegetation above a feral pig barrier fence in rainforest of Kilauea's East Rift, Hawaii Volcanoes National Park.

143033, 1999, Loh & Tunison: Vegetation recovery following pig removal in Olaa- Koa Rainforest Unit, Hawaii Volcanoes National Park

PARK : HAVO First Year: 1989 End Year: 2002 Status

Project Title Faya Tree Removal anf Forest Recovery Project

Data Type/Location 1989- approximately 60 plots, makai of Crater Rim Drive, between Thurston & Puhimau area.

Comments: Monitoring of long term recovery is planned at 10 year interval reading for 10-30 years.
CURRENT MONITORING PLAN

Data Collected

Proj Purpose Document plant establishment after fire tree removal

Oranizations associated with this Project:

Theme Keywords associated with Project

US National Park Service

Publications associated with this Project:

HAVO- Project review # 2001-002, Faya Tree Understory Restoration, R Loh, 2000

Completion Report (will fill in details when received from Rhonda)

Loh, Rhonda, 2004, PHD (will fill in with citation infromation)

PARK : HAVO First Year: 1986 End Year: Status In work

Project Title SEA Weed monitoring

Data Type/Location Transects in Park Special Ecological Areas including: Kipuka Ki, Keanakakoi, Olaa Lg Tract (not SEA), Puaulu, Mauna Loa SEA, Olaa Small Tract, Thurston SEA and East Rift SEA

Comments: Monitoring continuous at 5-10 year intervals. CURRENT MONITORING PLAN

Data Collected #s of individuals of priority weeds on transects throughout park SEA's

Proj Purpose Monitor populations of invasive species in Special Ecological Areas, and to evaluate effectiveness of management techniques in controlling or containing target weeds.

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

vascular plants

weed distribution

Publications associated with this Project:

Tunison, Tim. Alien and rare plan monitoring in small tract Olaa Special Ecological Area. 9 pages. No date.

Tunison, Tim. Monitoring alien plants in Thurston SEA. No date. 2 pages + map.

PARK : HAVO First Year: 1984 End Year: 1993 Status Complete

Project Title Mauna Loa Strip Transects-Historic

Data Type/Location 6 belt transects at 1000m intervals , between 5000ft & Fenceline at 7000ft elev. (Mauna Loa "upper unit")Transects are of variable length, 10 m wide, Alien plant cover estimated with Braun-Blanquet scale in 10x10m segments

Comments: MONITORING PLAN, BUT NOT CURRENT.

Data Collected No data being collected currently

Proj Purpose Determine distribution and abundance of alien plants and rare native plants in Special Ecological Areas(SEAs)

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

rare etc.

vascular plants

weed distribution

Publications associated with this Project:

PARK : HAVO First Year: 1984 End Year: 1994 Status Complete

Project Title Portulaca sclerocarpa at Puhimau Hot Spot and Keanakakoi

Data Type/Location Grided out Puhimau hotspot in 10x10m plots using a baseline and markers at the edge of the hotspot. Individuals of the endangered species were counted

Comments: This is not a current monitoring project, but may be revived as part of Linda's planned limiting factors study NOT CURRENT MONITORING PLAN

Data Collected none currently being collected

Proj Purpose Monitor population of endangered species Portulaca sclerocarpa

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

rare etc.

vascular plants

Publications associated with this Project:

PARK : HAVO First Year: End Year: Status In work

Project Title Pili prescribed burn experiments: Established vegetation

Data Type/Location Remnant Pili grassland, base Holei Pali. Wildfire in 1992. Presc. Burns in 100x200m blocks. 3 burn treatments, 1 control. Burning treats.= one burn, every 2.5 yr, every 5 yr. over 10-15 yr period. 23 total blocks, focusing on 3 per treat.=12 blocks

Comments: original plans to monitor a larger number of treatment plots were scaled back due to lava, funding.
CURRENT MONITORING PLAN

Data Collected Established vegetation monitored

Frequency, plant cover, grass density, shrub density, tree density - in 3 subsamples per treatment plot

Grass survivorship, shrub survivorship, tree survivorship- for 18 individuals per sp per treatment plot

Soil seedbank- 10 soil cores per treatment plot to be collected at 4-6 mo. Intervals

Invasive grass removal plots- removed all invasive grass sp within 10 4x4 m plots to test the response of native species with or without fire in the presence or absencce of invasive grass species

Proj Purpose Monitor recoverry of Pili grassland in 3 different prescribed burning regimes

Determine if Pili grasslands can be maintained or expanded, and the presence of exotic species reduced throught the use of prescribed burns

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects
restoration
vascular plants
weed control

Publications associated with this Project:

Unofficial Pub, Pili prescribe burn experiments, rloh 2/02- HAVO research center, nursery files

HAVO Project Review#2001-029, Pili grassland prescribed burn experiments, R. Loh. 2001

PARK : **HAVO** First Year: End Year: Status In work

Project Title Pili prescribed burn experiments: Fuels & Fire Severity

Data Type/Location Remnant Pili grassland, base Holei Pali. Wildfire in 1992. Presc. Burns in 100x200m blocks. 3 burn treatments, 1 control. Burning treats.: one burn, every 2.5 yr, every 5 yr. over 10-15 yr period. 23 total blocks, focusing on 3 per treat.=12 blocks

Comments: original plans to monitor a larger number of treatment plots were scaled back due to lava, funding.
CURRENT MONITORING PLAN

Data Collected Protocols according to 2001 Fire Monitoring Handbook
Dead & Down fuel load: sampled twigs, branches, stems and treee boles in and above litter alonga 30 foot random orientation planar transect; measures litter and duff depths every five feet in accordance with Brown's fuel transect guidelines(12? Subsamples Per tratment plot)

biomass: clipped, sorted, weighed 15 1x1 ft sample plots per treatment plot

burn severity ratings: rate & coded organic substrate and vegeattion impact along established cover transects immediately following the fire in 3 sub samples per plot.

Proj Purpose Determine if fuel loads decrease and fire severity of subsequent fires is reduced by periodic burning

Oranizations associated with this Project:

US National Park Service

Theme Keywords associated with Project

fire effects

vascular plants

Publications associated with this Project:

HAVO Project Review#2001-029, Pili grassland prescribed burn experiments, R. Loh. 2001

Unofficial Pub, Pili prescribe burn experiments, rloh 2/02- HAVO research center, nursery files

PARK : HAVO First Year: End Year: Status In work

Project Title Pili prescribed burn experiments:Seed addition experiments

Data Type/Location Remnant Pili grassland, base Holei Pali. Wildfire in 1992. Presc. Burns in 100x200m blocks. 3 burn treatments, 1 control. Burning treats.: one burn, every 2.5 yr, every 5 yr. over 10-15 yr period. 23 total blocks, focusing on 3 per treat.=12 blocks

Comments: original plans to monitor a larger number of treatment plots were scaled back due to lava, funding.
CURRENT MONITORING PLAN

Data Collected In each of the 12 focal blocks discussed below there are 48 2x2m seed addition plots of the 48 :

1/2 are on rock tumulus, 1/2 are in grassy depressions
1/2 were seeded preburn, 1/2 were seeded postburn
16 were seeded with"seed cocktail a"
16 were seeded with "seed cocktail c"
16 were seeded with "seed cocktail e"

Each of the three seed cocktails contains a different mixture of 16 total species of Native & Non-Native Fire Tolerant and Fire Sensitive plants in on of three different mixes ("seed cocktails")

In each plot seed recruitment, was read at 1 yr, up to 5 of each species in each height class were read at 3-6 mo., % cover (braun-blaunqet) read at 1 yr postburn

Proj Purpose Test the response of selected lowland native species to frequent fires

Oranizations associated with this Project:

Theme Keywords associated with Project

- fire effects
- restoration
- vascular plants

Publications associated with this Project:

- Unofficial Pub, Pili prescribe burn experiments, rloh 2/02- HAVO research center, nursery files
- HAVO Project Review #2002-007 Outplant /Seed native plants in Kealakomo Kipuka, Tunison 2002
- HAVO Project Review#2001-029, Pili grassland prescribed burn experiments, R. Loh. 2001

PARK : KAHO First Year: End Year: Status In work

Project Title Native plant outplantings and monitoring

Data Type/Location

Comments:

Data Collected Success of alien plant control methods, health of outplanted native plants.

Proj Purpose Monitor success of alien vegetation clearing and native plant outplantings.

Oranizations associated with this Project:

- US National Park Service
- Tropical reforestation ecology experiment?
- Kealakehe High School

Theme Keywords associated with Project

- alien species
- vascular plants

Publications associated with this Project:

PARK : **NPSA** First Year: 1999 End Year: Status In work

Project Title Long-term Monitoring Plots (LTMPs) of Trees

Data Type/Location Four 1.2 ha permanent forest plots in Tutuila. Trees marked with a numbered metal tag.

Comments: Similar work on Tau starting in Summer 2004 by Webb; however in February 2005, Cyclone Olaf caused severe damage to the vegetation on Tau. Webb revisited plots Apirl 25-May 12, 2005 to access damage. Metal tags were still attached; however most of the trees had fallen, thus it was difficult locating tags, etc.

Data Collected Monthly phenological census. Forest composition and structure.

Proj Purpose Census to determine new recruits and mortality patterns of trees (Webb's). First investigation (1999) was of spatial variation of rainforest tree community structure and composition to determine if forest structure and diversity varied as a function of topography; and in turn if this could influence patterns of habitat use by native forest birds and pteropodid bats.

Oranizations associated with this Project:

Asian Institute of Technology

Theme Keywords associated with Project

demography
dispersal
forest structure
phenology
trees

Publications associated with this Project:

NBibkey ID 571903. Webb, Edward, and S. Faaumu. 1999. Diversity and structure of tropical rain forest of Tutuila, American Samoa: effects of site age and substrate.

NBibkey ID 585489. Webb, Edward. 2005. Species composition and forest structure of four permanent forest monitoring plots in the Ta'u unit of the National Park of American Samoa. PCSU Tech Rpt 135.

NBibkey ID 171986. Whistler, W. Arthur. 1995. Permanent forest plot data from the National Park of American Samoa.

NBibkey ID 571902. Webb, Edward. 1999. Effects of topography on rainforest tree community structure and diversity in American Samoa, and implications for frugivore and nectarivore polulations.

NBibkey ID 585275. Monello, Ryan. 2004. Terrestrial Resource Report National Park of American Samoa.

PARK : **PUHO** First Year: 2001 End Year: Status In work

Project Title Roadside Weeds Survey

Data Type/Location Surveyors walk major roadsides on Hawaii Island. Both sides of the roadside are walked, as statistically significant differences are found in weed species on either side of the road.

Comments: Weed community assemblage on either side of the road has been found to have statistically significant differences. NOT MONITORING--MOVE TO DATASET CATALOG

Data Collected Survey of presence of weeds on major roadsides on Hawaii Island

Proj Purpose Survey of presence of weeds on major roadsides on Hawaii Island-Includes roads near PUHO

Oranizations associated with this Project:

US Geological Survey

Theme Keywords associated with Project

vascular plants
weed distribution

Publications associated with this Project:

Poster, 2003 Hawaii Conservation Conference- Kealii Bio

Topic Visitor Use

PARK : **USAR** First Year: End Year: Status In work

Project Title Visitation Statistics

Data Type/Location Data collected will differ by park. These methods can also be found BY PARK at:http://www2.nature.nps.gov/stats/ See park specifics below:
USAR: Monthly public use reports are entered on Form 10-157. The following information is collected: 1) Recreational visits: the number of visitors who take the complete tour (movie and boat); the number of visitors who enter the visitor center but do not take the complete tour; the number of visitors after 5pm and before 7am who enter the grounds but do not enter the visitor center; and the number of visitors transported to the USS Arizona memorial by the US navy but do not enter the visitors center. Total recreational visits are the sum of those in number 1. 2) Non-recreation visits are the number of US navy personnel going to the USS Arizona Memorial for reenlistment ceremonies 3)recreational visitor hours: the total recreation visits are multiplied by two hours. 4) non-recreation visitor hours: The total non-recreation visits are multiplied by two hours.

WAPA: Monthly public use report - the following information is recorded on form 10-157. Recreation visits: 1) the number of visitors entering the visitor center. 2) the number of special use visitors. 3) the number of visitors to Asan Pt. (estimated). 4) the number of visitors to Asan Bay Overlook (est). 5) the number of visitors to Apaca Point (est). 6) the number of visitors to Gaan Point(est). 7) the number of visitors to Piti Guns (est). 8) The number of visitors to Rizal Pt (estimated). Non recreational visits: the actual number of non-recreational visitors entering the park. Recreational visitor hours: Recreation visitor hours are the sum of the subtotals of each of the locations (visitor center, Asan Point, Asan Bay Overlook, Apaca Pt., Gaan Pt., Piti Guns, Rizal Pt., & special use visitors). Each subtotal is the result of multiplying the number of visitors associated with that location by its length-of-stay multiplier. Non-recreation visitor hours: The number of non-recreation visitors is multiplied by thirty minutes (0.5 hour).

Comments: Raychelle created entry for WAPA and USAR on 30 June 05; This record pertains to ALL parks with the EXCEPTION of AMME and ALKA (not in the database)
There are also estimates for visitor spending and economic impacts by park and by state, please see: http://www.prr.msu.edu/yayen/NPS/NPSSelect.cfm

Data Collected USAR: data online dates back to 1985 Data for each park can be found at http://www2.nature.nps.gov/stats/
WAPA: data online dates back to 1981 all PACN parks have different time periods depending on opening date
HAVO: data online dates back to 1921
HALE: data online dates back to 1960
KALA: data online dates back to 1996
KAHO: data online dates back to 1988
NPSA: data online dates back to 2002
PUHO: data online dates back to 1973
PUHE: data online dates back to 1974

Proj Purpose monitor the number of visitors and estimate the time spent at parks and park attractions by visitors; The objective of Director's Order 82 (DO82) is to set forth policy and procedures for collecting and reporting public use data at the units of the National Park Service, and can be found at: http://www2.nature.nps.gov/stats/do_82.pdf

Oranizations associated with this Project:	Theme Keywords associated with Project
US National Park Service	visitor use

Publications associated with this Project:

PARK : **HALE** First Year: 1979 End Year: Status In work

Project Title Visitor Use Monitoring

Data Type/Location Crater District: 1) An inductive loop traffic counter is located on the entrance lane to the park on Haleakala Highway. The traffic count is reduced for nonrecreation vehicles (800 per month), nonreportable vehicles (550 per month), and buses (to determine the number of buses, divide the paying and nonpaying bus visitors by 23 (average persons per bus)). The reduced traffic count is multiplied by the persons-per-vehicle (PPV) multiplier of 2.7. 2) The number of paying bus visitors is determined from SF-215 deposits from commercial bus operators. 3) The number of paying bus visitors is multiplied by 0.20 to estimate the number of golden age visitors (non-paying) and the number of tour bus visitors entering after the station is closed. Kipahulu District: 4) An inductive loop traffic counter is located on Highway 31 covering both lanes. The traffic count is divided by 1.9 to reduce for duplicate counting (this takes into account 4 wheel drive vehicles that cross the counter only once). The reduced traffic count is reduced for nonrecreation vehicles (620 per month), nonreportable vehicles (200 per month), and tour vans. The reduced traffic count is multiplied by the PPV multiplier (2.7). 5) The estimated count of tour vans as reported by park rangers is multiplied by the persons-per-van multiplier of 10. Nonrecreation visits: Crater District: 1) The number of nonrecreation vehicles (800 per month) is multiplied by the nonrecreation PPV multiplier of 2.1. Kipahulu District: 2) The number of nonrecreation vehicles (620 per month) is multiplied by the nonrecreation PPV multiplier of 1.2. Recreation Visitor Hours Recreation visitor hours are the sum of the subtotals of each of the categories listed in Table 1 (see http://www2.nature.nps.gov/stats/). Each subtotal is the results of multiplying the number of visitors associated with that category by its length-of-stay multiplier. Nonrecreation Visitor Hours
The number of nonrecreation visitors is multiplied by 1.0 hour for Crater District and 10 minutes (0.166) for Kipahulu District. Overnight Stays NPS Campgrounds - Hosmer Grove Campground, O'heo Campground. The actual count of persons staying overnight as reported by park ranger observations. NPS Backcountry - All locations The number of nights stayed by backpackers and horse campers. NPS Miscellaneous - Holua Cabin, Kapalaoa Cabin, Paliku Cabin The number of nights stayed by cabin users.
Special Use Data: The number of O'heo interpretive hikes, the number of O'heo hikers, the number of vehicles at Kipahulu District, the number of vehicles at Crater District, the number of tour vans at Kipahulu District, the number of tour buses (The number of tour buses is estimated by dividing the paying bus visitors and golden age visitors by 23.

Comments:

Data Collected

Proj Purpose To monitor the numbers of visitors to Haleakala

Oranizations associated with this Project:	Theme Keywords associated with Project
US National Park Service	visitor use

Publications associated with this Project:

PARK : **HAVO** First Year: End Year: Status

Project Title Visitor Use Statistics at Hawaii Volcanoes National Park

Data Type/Location

Comments: CURRENT MONITORING PLAN

Data Collected Total visits, recreational vehicles, non-recreational vehicles, bus vehicles, Namakani Paio tents, Kipuka Campground estimates, Volcano House use, Kilauea Military Camp use, Backcountry use- @ Halape, Kaaha, Keauhou, ML Summit cabin, Napau, Pepeiau cabin, Red Hill cabin.

vehicles, % change, YTD information is being collected and is available online Jan 1990 to present

Proj Purpose Monitoring of visitor use within Hawaii Volcanoes National Park

Oranizations associated with this Project:	Theme Keywords associated with Project
US National Park Service	visitor use

Publications associated with this Project:

PARK : **KALA** First Year: 1996 End Year: Status In work

Project Title Park Visitation

Data Type/Location Recreation visits are monitored by collecting the number of registered visitors at the Department of Health, the number of visitors taking the rain forest jeep tours, and the number of vehicles counted at the Kalaupapa Peninsula overlook. The vehicle count is multiplied by the persons-per-vehicle multiplier of 2. Special use data includes the number of visitors at the overlook, the number of visitors by mule, The number of visitors hiking. The number of visitors by plane. The number of visitors by helicopter tour. The number of visitors by rainforest jeep tours. The number of other rainforest visitors, The number of bus passengers on Damien tours, number of buses

Comments:

Data Collected Number of visitors has been collected in 1990.

Proj Purpose To monitor the number/type of visitors that visit Kalauapapa each year

Oranizations associated with this Project:

Theme Keywords associated with Project

visitor use

Publications associated with this Project:

Topic Water Quality

PARK : ALKA First Year: 1982 End Year: Status In work

Project Title Comprehensive Environmental Monitoring Program (CEMP)

Data Type/Location Located around Keahole Point in west Hawaii; 21 groundwater monitoring wells, 2 anchialine pools, 2 aquaculture outfall trenches,11 coastal sites, and 6 offshore transects with surface and bottom stations.

Comments: Aquaculture facility bringing up both surface and abyssal seawater for farmers growing a variety of organisms from microalgae to fish and shellfish. Used water is discharged into "injection wells" which are typically exposed trenches.

Data Collected From 1982 to 1992; weekly sampling of incoming seawater (surface and deep), monthly sampling of groundwater wells, anchialine pools, outfalls, coastal and offshore sites (surface and bottom) for temperature, pH, salinity, DO, fecal coliform, enterococci, nutrients, total organic carbon, chlorophyll a, and turbidity. After 1992, anchialine pools, outfalls, coastal and offshore sites were reduced to quarterly collection and the offshore sites were changed to transects with 5 surface and 5 bottom collection locations and added benthic and fish surveys.

Proj Purpose Fulfill NPDES and county permit requirements of monitoring groundwater, nearshore marine areas, anchialine pools, and aquaculture outfalls.

Oranizations associated with this Project:

Natural Energy Laboratory of Hawai`i Authority

Theme Keywords associated with Project

benthic
coral reef
fish
invertebrates
nearshore
offshore

Publications associated with this Project:

PARK : ALKA First Year: 1973 End Year: Status In work

Project Title Hawaii State Department of Health Clean Water Branch Recreational Beach Monitoring

Data Type/Location Kona Hilton, Banyans, Honokohau Harbor inside KAHO. Puako Beach Lots, Hapuna Beach, Kawaihae Harbor and Pier, Mauna Kea Beach Hotel, Kauhako Bay/Hookena, Honaunau Bay inside PUHO, Kealakekua Bay, Kaimu Beach, HK Brown Park

Comments: This monitoring also pertains to HALE, PUHE, AND PUHO. Sites formerly monitored include; Oheo gulch (HALE) from 1973 to 2000, Spencer Beach State Park (PUHE) 1973 to 2000, and Honaunau Bay (PUHO) 1973 to 1998.

Data Collected Bacterial assays varying since 1973 with subsets of the following parameters: Salinity, total coliform, fecal coliform, enterococci, fecal streptococci, and C. porfringens, temperature, total nitrogen, TKN, nitrate/nitrite, total phosphorous, and turbidity, dissolved oxygen, transparency, pH, total non-filterable residue, ammonia, phosphate, total organic carbon, silica, and chlorophyll a, salinity, and phosphate.

Proj Purpose monitoring for indicators of sewage pollution at recreational beach areas.

Oranizations associated with this Project:

State of Hawai`i Department of Health

Theme Keywords associated with Project

cultural
water quality

Publications associated with this Project:

PARK : **ALKA** First Year: End Year: Status In work

Project Title Saltwater pool bacterial monitoring at Kaupulehu and Royal Seacliff

Data Type/Location Grab samples collected from man-made saltwater pools are assayed for sewage indicator bacteria

Comments:

Data Collected Biweekly assays for fecal coliform and Enterococci

Proj Purpose monitor for fecal colifor and Enterococci in commercial saltwater swimming pools

Oranizations associated with this Project:

AECOS Environmental Laboratory

Theme Keywords associated with Project

bacteria

water quality

Publications associated with this Project:

PARK : **AMME** First Year: 1998 End Year: 2004 Status

Project Title Garapan fuel pipeline remediation

Data Type/Location Unknown at this time. Up to 18 groundwater wells were installed inside the American Memorial Wetland and since capped by the ACOE.

Comments: I have a copy of the first reconassaince plan (partial) that I copied from Steve Anthony at USGS. Kimber is making contact w/Steve's assistant Jeff, to divide up duties to get this information. Both Kimber and myself have both tried endlessly to find out about the old wells and new wells. We have gone back and forth b/t DEQ and ACOE. Currently we need to know: 1) was this monitoring plan enabled? 2) if so, where are the data and the progress reports and the final report? 2) where are the data for this reconassaince report?

Data Collected Unknown at this time. Presumably the groundwaters were tested for hydrocarbons, heavy metals, and other industrial pollutants.

Proj Purpose The wells were used to determine the extent of petroleum contamination at the site and implement a bio-technology process that will reduce soil and groundwater contamination to acceptable levels as specified by CEPOH contract monitor.

Oranizations associated with this Project:

U.S. Army Corps of Engineers

Ogden Environmental and Energy Services Co., Inc.

Theme Keywords associated with Project

groundwater

soil quality

water quality

wetlands

Publications associated with this Project:

BK139282, Work plan and quality assurance project plan for the remedial investigation and remedial action at the former Garapan Pipeline, Garapan, Saipan, Commonwealth of the Northern Mariana Islands. Ogden Environmental and Energy Services. 1997, Honolulu, HI. Prepared for the United States Army Engineer Division, Pacific Ocean, Corps of Engineers, Directorate of Engineering, Environmental Division, Building T-1, Fort Shafter, Hawai`i 96858-5440

Remedial Action Report, Former Garapan Fuel Pipeline, Garapan, Saipan, Commonwealth of the Mariana Islands. Prepared for US Army Engineer Division, Pacific Ocean Corps of Engineers, Contract No. DACA83-96-D-0007. Prepared by Ogden Envrionmental and Energy Services Co., Inc. December 1998

PARK : **AMME** First Year: 1994 End Year: Status In work

Project Title CNMI DEQ Beach Monitoring

Data Type/Location Five coastal sites located within the AMME shoreline including the Puerto Rico dump, the marina, and around Puntan Muchot to the Hyatt outfall.

Comments:

Data Collected 1994 to present: Enterococci, fecal coliform, nutrients, pH, dissolved oxygen, salinity, and turbidity.

Proj Purpose monitor public swimming areas for sewage indicator bacteria including water quality

Oranizations associated with this Project:	Theme Keywords associated with Project
Commonwealth of Northern Marianas Islands - Department of Environmental Quality	water quality

Publications associated with this Project:

PARK : **AMME** First Year: 1994 End Year: Status In work

Project Title CNMI DEQ Beach Monitoring Program

Data Type/Location approximately monthly colloection of water samples along Saipan's coastline including five sites adjacent to the AMME coastline.

Comments:

Data Collected 1994 to present; water temperature, salinity, pH, turbidity, dissolved oxygen, nitrate, phosphate, total phosphorous, enterococci, and fecal coliform.

Proj Purpose Monitor bacteria and water quality at public swimming areas

Oranizations associated with this Project:	Theme Keywords associated with Project
Commonwealth of Northern Marianas Islands - Department of Environmental Quality	water quality

Publications associated with this Project:

PARK : **KAHO** First Year: 2005 End Year: Status In work

Project Title Shores at Kohanaiki Environmental Monitoring

Data Type/Location Water sampling will occur every two months at five nearchore transects fronting the property and three control sites as well as anchiline pools in line with transects. Marine community assessments are made in five areas (including one control area) with three transect each located in different ecological zones.

Comments: Also applies to ALKA. Duration unknown. This monitoring will be intensive at first until a baseline is established and then will drop off in frquency unless a problem is detected.

Data Collected April 2005; 66 marine water samples from eight nearshore transects including one inside KAHO. May 2005; established and surveyed 15 transects to monitor marine communities.

Proj Purpose Baseline water quality and biota monitoring for compliance with Special Management Area Use permit No. 439 to develop coastal parcel adjacent to the northern boundary of KAHO.

Oranizations associated with this Project:	Theme Keywords associated with Project
Marine Consultants of Hawaii	anchialine pools
Rutter Development Corporation	benthic
Marine Consultants of Hawaii	coral reef
	marine fish
	nearshore
	water quality

Publications associated with this Project:

PARK : KALA First Year: 2004 End Year: Status

Project Title Water quality of drinking water supply

Data Type/Location KALA maintenance staff collect sample from source for processing by Hawaii Department of Health

Comments:

Data Collected coliform bacteria and chlorides are monitored regularly (weekly?) while levels of metals and industrial chemicals are monitored every three to five years depending on results.

Proj Purpose monitor human health parameters of drinking water supply well

Oranizations associated with this Project:	Theme Keywords associated with Project
Hawaii Department of Health	water quality

Publications associated with this Project:

PARK : KALA First Year: 1974 End Year: 1982 Status Complete

Project Title USGS stream monitoring

Data Type/Location KALA; two stations on Waikolu Stream (gages #16408000 and #16405500), Molokai Tunnel east portal (gage #16405100), Waihanau Stream (gage #16409000) and Keolewa Stream (gage #16410000). USAR; Halawa Stream (gage #16226200). HALE; Palikea Stream (gage #16501200), PUHO; Kiilae stream (gage #16759800) far up-slope of PUHO boundary.

Comments: This stream monitoring station was located far up-slope of the park boundary.

Data Collected Currently: Halawa stream at USAR (gage #16226200) and Palikea Stream at HALE (gage #16501200) for discharge and peak height.
Formerly: KALA; two stations on Waikolu Stream (gages #16408000 and #16405500) were monitored from 1969 to 1976 and one in the Molokai Tunnel east portal (gage #16405100) was monitored from 1975 to 1989. Two other stream gages in KALA were operated between 1940 and 1944 on Waihanau Stream (gage #16409000) and Keolewa Stream (gage #16410000); parameters included temperature, pH, and discharge. USAR; Halawa stream (gage # 16226200) from 1983 to 1999, water temperature, specific conductance, pH, dissolved oxygen, and uspended sediment. HALE; Palikea/Oheo Gulch (gage # 16501200) from 1972 to 1983, temperature, flow, specific conductance, and pH were monitored approximately every two months. Between 1972 and 1977, additional data on turbidity, color, carbon dioxide, alkalinity, carbonate, nutrients, hardness, dissolved solids, and various minerals were recorded. In 1972, assays for heavy metals and total coliform were performed. PUHO; Kiilae stream (gage #16759800) 1974-1982; flow, temperature, specific conductance, and pH.

Proj Purpose Monitor stream water quantity and quality

Oranizations associated with this Project:	Theme Keywords associated with Project
US Geological Survey	stream flow water quality

Publications associated with this Project:

PARK : **NPSA** First Year: 2003 End Year: Status In work

Project Title ASEPA Stream Water Quality Monitoring Program - Study#: NPSA-00211

Data Type/Location Samples taken from Fagatuitui Stream (the eastern most stream draining into Fagatuitui Cove) and Amalau Stream (east of Vatia) for one year June 2003 - May 2004. Starting in June 2004 samples are being taken from Agasavili Stream until May 2005.

Comments: Permit#: NPSA-2003-SCI-0004.

Data Collected Monthly specimen collections for field measurement and analysis. Some animals may be preserved for later analysis or identification. Organisms collected include: mountain bass (Kuhlia sp.), shrimp (Macrobranchium sp. Atya sp.), shrimp (Neritina sp.), and crane flies (Genus Diperta).

Proj Purpose To determine whether stream water quality on Tutuila meets American Samoa water quality standards(ASWQS) for pH, dissolved oxygen (DO), turbidity, total suspended solids (TSS), total nitrogen (TN), total phosphorus (TP), and bacteria indicators. To assess the condition and integrity of stream waters in American Samoa using water quality, habitat, and biological data.

Oranizations associated with this Project:

American Samoa Environmental Protection Agency

Theme Keywords associated with Project

streams

water quality

watersheds

Publications associated with this Project:

NBibkey ID 585055. DiDonato, Guy. 2004. ASEPA Stream Monitoring: Results from year 1 and preliminary interpretation.

PARK : **NPSA** First Year: 2001 End Year: Status In work

Project Title Beach Water Monitoring Program

Data Type/Location Samples are analyzed for Enterococci and measurements of turbidity, conductivity, chlorophyll a, pH, temperature, salinity and dissolved oxygen are collected. One beach (Vatia)is near the park boundaries, and the remaining beach are in the territory.

Comments:

Data Collected Highly popular beach waters are sampled on a weekly basis. Less popular beach waters are sampled on a monthly or quarterly basis.

Proj Purpose Recreational beach water monitoring to determine if beach is safe for swimming.

Oranizations associated with this Project:

American Samoa Environmental Protection Agency

Theme Keywords associated with Project

water quality

Publications associated with this Project:

PARK : **PUHE** First Year: 1994 End Year: Status In work

Project Title Mauna Kea Soil and Water Conservation District (MKSWCD) Pelekane Bay Coordinated Resource Management Plan

Data Type/Location experimental paddock rotation in ranch areas, sediment traps and rain gauges in streams and gulches, automated flowmeter and turbidimeter in lower reach of streams

Comments: This watershed management program may be suspended although the automated turbidity meters are in place and will continue to be monitored by Carolyn Stewart.

Data Collected erosion rates, vegetation growth, and precipitation in watershed, flow rate and turbidity in Makeahua Stream and eventually Makahuna gulch

Proj Purpose reduction and mitigation of erosion from watershed into Pelekane Bay

Oranizations associated with this Project:

- Mauna Kea Soil and Water Conservation District
- US Department of Agriculture National Resources Conservation Service

Theme Keywords associated with Project

- coral reef
- streams
- vascular plants
- water quality
- watersheds

Publications associated with this Project:

PARK : **USAR** First Year: 2002 End Year: 2003 Status In work

Project Title Dynamics of the physical and chemical environment at the USS Arizona Memorial: 2002-200x

Data Type/Location Physical environment device (Sontek Triton wave/tide gauge with 10MHz ADV used to collect 3D single-point measurements of current velocity and acoustic backscatter data) deployed in 10m of wter 50 m southeast of USAR forward #1 turret. Seafloor here is organic rich fine silt/mud. Chemical monitoring device (YSI 6600 Sonde multisensor) deployed on USAR's hull collecting single-point measurements.

Comments: Kimber & Raychelle debated including this or not. We decided to leave it in; however, it is one of the few data sets for USAR. As a monitoring project it is important to USAR and the development of a model (of corrosion) to project in the future and could help determine what monitoring is needed.

Data Collected Current velocity, acoustic backscatter, pressure sensor to measure tides, direction wave spectra, water temp, salinity,pH,DO, and oxygen reduction potential measured every 15 minutes to 1 hour. Every 2 months devices were collected to download data.

Proj Purpose Objective was to understand how waves, currents & water column properties (temperature, salinity, pH, turbidity and dissolved oxygen) in the vicinity of the Memorial may vary over the year. This research is conducted to understand and characterize the nature and rate of natural processes affecting the deterioration of the USS Arizona

Oranizations associated with this Project:

- USGS, Pacific Science Center
- US National Park Service

Theme Keywords associated with Project

- cultural
- erosion
- physical

Publications associated with this Project:

PARK : **USAR** First Year: 2002 End Year: Status In work

Project Title USEPA Environmental Monitoring and Assessment Program (EMAP)

Data Type/Location The USEPA implemented the Hawaii EMAP in 2002 which included 1 randomly selected site in Pearl Harbor`s Middle Loch. Sample locations in the 2002 assessment were limited to embayments. Sampling will begin again in early 2005 at a new set of randomly Randomly selected locations will include open coastal areas as well as embayments. Hawaii sites selected in 2005 may be adjacent to KALA, HALE, ALKA, PUHE, PUHO, and HAVO. In 2004, American Samoa EPA collected from marine areas adjacent to and within NPSA. Guam EPA is beginning EMAP sampling in 2005 which will likely include sites within the marine areas of WAPA.

Comments: THIS PROJECT ALSO PERTAINS TO WAPA, NPSA, KALA, HALE, ALKA, PUHE, PUHO, AND HAVO ALTHOUGH THE SITE LOCATIONS ARE NOT WITHIN PARK BOUNDARIES, THE CONDITION ASSESSMENTS WILL APPLY TO THE NEARBY MARINE RESOURCES.

Data Collected The USEPA implemented the Hawaii EMAP in 2002, American Samoa in 2004, and Guam in 2005. Parameters include physical and chemical water quality; pH, temperature, salinity, dissolved oxygen, chlorophyll a, inorganic nutrients, total nitrogen, and total phosphorous. Fish and sediment sample are also collected and analyzed for bioaccumulation of heavy metals and industrial toxins.

Proj Purpose Overall assessment of the condition of coastal and neashore waters of the US

Oranizations associated with this Project:	Theme Keywords associated with Project
Environmental Protection Agency	benthic fish water quality water quality

Publications associated with this Project:

PARK : **USAR** First Year: End Year: Status In work

Project Title Fort Kamehameha Wastewater Treatment Facility discharge monitoring

Data Type/Location treated water effluent and the mixing zone at the mouth of Pearl Harbor

Comments: This monitoring is conducted adjacent to USAR at the mouth of Pearl Harbor.

Data Collected The treated waste water is monitored continuously for total residual chlorine, and daily determinations are made for 5-day biological oxygen demand, total suspended solids, pH, oil and grease, and settling solids. Monthly analyses are performed to monitor effluent levels of ammonia, nitrate/nitrite, total nitrogen, total phosphorous, 5-day BOD, total suspended solids percent removal, heavy metals (cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc), and toxicity testing with Ceriodaphnia dubia and Tripneustes gratilla. The estuarine mixing zone for discharged effluent is monitored quarterly for temperature, ammonia, nitrate/nitrite, total nitrogen, total phosphorous, turbidity, chlorophyll a, salinity, dissolved oxygen, and pH.

Proj Purpose monitor effluent from wastewater treatment facility

Oranizations associated with this Project:	Theme Keywords associated with Project
Navy Environmental	water quality

Publications associated with this Project:

PARK : **USAR** First Year: End Year: Status

Project Title Nonpoint source pollution monitoring

Data Type/Location Storm water runoff is monitored at eight industrial sites in and around the Pearl Harbor Naval Compound.

Comments: This monitoring is conducted adjacent to USAR.

Data Collected Depending on the industrial activities in the drainage area being sampled, parameters analyzed may include heavy metals, MBAS, chemical oxygen demand, biological oxygen demand, total suspended solids, total dissolved solids, ammonia, nitrate/nitrite, total nitrogen, total kjeldahl nitrogen, total phosphorous, pH, specific conductance, oil and grease, total petroleum hydrocarbons (THP), THP as gasoline, THP as diesel, total fuel hydrocarbons, and 21 other organic compounds.

Proj Purpose After qualifying rainfall events, storm water runoff is monitored at eight industrial sites in and around the Pearl Harbor Naval Compound. Parameters analyzed depend on the industrial activities in the drainage area being sampled.

Oranizations associated with this Project:	Theme Keywords associated with Project
Navy Environmental	storm water runoff water quality

Publications associated with this Project:

PARK : **USAR** First Year: End Year: Status

Project Title USGS Stream flow monitoring

Data Type/Location Halawa Stream USGS gage #16226200

Comments: Sream mouth is adjacent to USAR visitor center

Data Collected discharge and gage height

Proj Purpose Monitor discharge and peak flow

Oranizations associated with this Project:	Theme Keywords associated with Project
US Geological Survey	stream flow

Publications associated with this Project:

PARK : **WAPA** First Year: 2005 End Year: Status In work

Project Title EPA EMAP Wadeable Rivers

Data Type/Location Random site selection limited to wadeable rivers

Comments:

Data Collected implemented in 2005; temperature, pH, dissolved oxygen, specific conductance, sediment and tissue pollutants, and aquatic life assessments

Proj Purpose Assessment of stream/river condition

Oranizations associated with this Project:	Theme Keywords associated with Project
Guam Environmental Protection Agency	water quality

Publications associated with this Project:

PARK : **WAPA** First Year: 1974 End Year: 1991 Status Complete

Project Title GEPA Surface Water Monitoring Network

Data Type/Location Salinas River mouth and up-slope of the Agat Unit: two sites on the Namo River and one of it's tributaries below the Fena Water Treatment Plant. Also the Matgue River in Asan and the Masso River which passes through Piti.

Comments: Some sites in Agat paired with reef sampling sites.

Data Collected 1974 to 1991: Temperature, pH, dissolved oxygen, specific conductance,

Proj Purpose Monitor the water quality of Guam's streams and rivers

Oranizations associated with this Project:	Theme Keywords associated with Project
Guam Environmental Protection Agency	water quality

Publications associated with this Project:

PARK : **WAPA** First Year: 1974 End Year: Status In work

Project Title Recreational Waters Report Sampling Sites

Data Type/Location The monitoring program of Environmental Monitoring and Analytical Services Division takes water samples of 38 beaches every Wednesday; Beaches in close proximity to Piti and Asan include: Adelup Park Beach West, Asan Bay, Piti Park, Santos Memorial Park, United Seaman's Service, Rizal Beach, Namo Beach (North Togcha Beach), Agat Bay (Middle Togcha Beach), Southern Christian Academy Beach (South Togcha Beach). Lat/long, 3-yr trend chart, GEPA site number, sampling location description, number of recent advisories, and GWS classifcation for each site can be found at: http://www.guamepa.govguam.net/programs/emas/sites.html

Comments: Victoria Cummings was the contact for more information on the beach monitoring from the laboratory. Kimber Deverse talked with Jesse Cruz, but Anna Maria Leon Guerrero answered email questions. All three are biologists with the GEPA monitoring program.

Data Collected Grab sample collected and analyzed for concentrations of the enterococcus bacteria

Proj Purpose Part of Water Monitoring Strategy for the Territory of Guam (WMSTG)
Monitoring of Guam's recreational beaches are mandated by 10 Guam Code Anootated, Chapter 47 (Water Pollution Control Act) to protect public health from the adverse effects of swimming in polluted waters. Guam EPA has provided this service to the community since 1974.

Oranizations associated with this Project:	Theme Keywords associated with Project
Guam Environmental Protection Agency	

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status

Project Title Hydrologic Data Collection in Guam

Data Type/Location

Comments: Mt. Chachao climate data: daily rainfall data from Oct. 1, 1990 to Sept. 30, 2001 is available for download (Excel format 190 KB) at: http://hi.water.usgs.gov/guam/mtchachao_rg.html

Data Collected stream gauge number: 16807600 Asan River at Asan and 16808120 Namo River at Santa Rita
climate station: 132617144423366 MOUNT CHACHAO Rain Gage NEAR PITI, GUAM, data collected from February 1973 to present

Proj Purpose "The objectives of the hydrologic data-collection program in Guam are to collect, analyze, and publish data on rainfall, surface water, and ground water from a network of sites on the island of Guam. "

Oranizations associated with this Project:

- US Geological Survey
- University of Guam, Water and Energy Resources Institute
- U.S. Army Corps of Engineers
- U.S. Navy Public Works Center Guam

Theme Keywords associated with Project

Publications associated with this Project:

Hill, B.R., and Fontaine, R.A., 2000, Water resources data Hawaii and other Pacific areas, water year 1990. Volume 2. Guam, Northern Mariana Islands, Federated States of Micronesia, Palau, and American Samoa: U.S. Geological Survey Water-Data Report HI-90-2, 126 p.

PARK : **WAPA** First Year: End Year: Status In work

Project Title Orote Dump Remediation

Data Type/Location Groundwater wells on Orote Peninsula and reef areas in Agat Bay

Comments: Initial sampling was intensive and then downgraded to address the priority toxins found. This monitoring will become less and less frequent as the resources are shown to be toxin-free.

Data Collected groundwater quality and bioaccumulation by marine invertebrates and marine fish. Parameters include: PCBs, heavy metals, dioxins, ferro-cyanins, and chlorinated pesticides.

Proj Purpose Monitor groundwater, marine invertebrates, and marine fish for contamination

Oranizations associated with this Project:

- U.S. Navy Public Works Center Guam

Theme Keywords associated with Project

- groundwater
- invertebrates
- marine fish
- sediment quality
- water quality

Publications associated with this Project:

PARK : **WAPA** First Year: End Year: Status Complete

Project Title Surface Water Monitoring Network (SWMN)

Data Type/Location 3 major water categories (river, marine, reef complexes) sampled on Rotating Basin Design (outlined by EPA's Env Monitoring and Assessment Program). Total of 65 River Stations, 17 Reef Stations and 38 Marine Stations. 4 subcomplexes sampled for two 6-week periods every other year (w/ first period during dry season (Jan-Jun); second during wet season (Jul to Dec). Over 2-yr period, all subcomplexes monitored. Monitoring prog includes biological portion (see biological monitoring section).
River sites: three in the Piti/Asan Watershed, three in the Namo River, Togcha River, Salines River, Finile Creek.
Reef sites: Agat Bay (mouth of Namo and north of Agat STP outfall)
Marine Site: Agat Bay (Agat STP outfall)

Comments: Anna sent Kimber DeVerse, forward to Raychelle Daniel, a copy of an excel spreadsheet with locations with lat/long & exact location description (there were locations located within the park).
While chemical water sampling provides a snapshot of conditions at the time of sample collection, biological, sediment and tissue results provide a view of conditions over a somewhat longer time period. Based upon this, the Revised Guam NPS monitoring
program will serve to assess the effectiveness of agricultural and urban management measures that are currently being implemented island wide. Guam s NPS monitoring program and the Guam Water Monitoring Strategy (GWMS) are currently being revised to
incorporate new elements to its Biological Monitoring Program. NOT CURRENT MONITORING.

The original "Marine Biological Monitoring" was designed to only collect data on species composition, substrate type, percent cover, and fish assemblage. This program is being expanded to now include a "Toxic Materials Monitoring Program for Sediment and Tissue," and a "Freshwater Periphyton and Benthic Macroinvertebrates Assessment Program."

The Freshwater Periphyton and Benthic Macroinvertebrates Assessment Program for Guam's river are being developed and drafted from techniques modified from USEPA guidance s (EPA 841-D-97-022) and the 18th Edition Standard Methods. The goals of this program are to qualitatively and quantitatively assess the periphyton and benthic macroinvertebrate assemblages in Guam s freshwater environments with water quality during the wet and dry seasons. Draft Documents will not be finalized until all metrics are tested and verified and all supporting documents (i.e., Sampling Analyses Plan [SAP], Stand Operating Procedures [SOP], Data Quality Objectives [DQO], and a Quality Assurance Program Plan [QAPP]) are also developed and finalized. The projected time frame for document completion and metric verification is the end of fiscal year 2002.

Data Collected "conventionals": pH, Total Suspended Solids, Total Dissolved Solids, Temperature, Turbidity, Nitrite-nitrogen, Dissolved oxygen, Salinity, Nitrate-nitrogen, Total phosphorous, Ortho-phosphorous.

Proj Purpose With the beach monitoring, the two comprise The Water Monitoring Strategy for the Territory of Guam (WMSTG). Which the goals are to: Conduct a comprehensive assessment of water quality throughout the island using a rotating basin approach; Complete a thorough evaluation of monitoring data. SWMN focuses mainly on the southern region of Guam, where the majority of all surface water features exist. The coastal assessment of Guam is also covered under the SWMS as the Marine and Reef Flat Networks. These two networks are incorporated into one overall network from headwaters to receiving waters, by watershed, to profile the dispersion of pollutants.
Evaluate if the quality of the Island's waters is suitable for their designated uses; Evaluate if the Guam WQS are appropriate and relevant to present conditions in the waters of the Island; and
Coordinate new approaches to improving and protecting the islands water resources

Oranizations associated with this Project: Theme Keywords associated with Project

Guam Environmental Protection Agency

Publications associated with this Project: